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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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With this issue is published the Index to Volume XVII of THE CHEMICAL AGE, *covering the period July 2—December 31, 1927.*

An Interesting Dyestuffs Case

PARTICULARS have been published in the Press this week of an interesting case under the Dyestuffs Act, in which an application by a firm of ink manufacturers for an importing licence has been refused by the Dyestuffs Licensing Committee. It may be that the facts on which the Committee have acted are not fully stated, and that other factors not yet disclosed may have to be taken into account. But the position as described in the Press is roughly as follows.

The firm of Charles M. Higgins and Co., of Brooklands, New York, are manufacturers and exporters of inks. Their British manager is Mr. Charles W. Brown, of 71, Farringdon Avenue, London. The firm manufacture among many other things a green drawing-ink, which is said to be well known and widely used. They recently learned that this ink, presumably on account of colouring matter contained in it, came within the scope of the Dyestuffs Act, which prohibits the importation (except, of course, under licence) of "all synthetic organic dyestuffs, colours, and colouring matters." It is not stated what the synthetic colouring matter used in this ink was, but the firm seem to have recognised that it came within the Act's prohibition, for they bought their supplies of it from the Clayton Aniline Co. of Manchester, who are officially described as sole concessionaires for England of the Society of Chemical Industry in Basle, Switzerland. The dye used in the ink amounted to 1 per cent., and having assured themselves that this was of British manufacture, the firm assumed that they had fully complied with the terms of the Dyestuffs Act, and were entitled to export their ink into this country. They failed, however, to obtain a licence, and a consignment of the ink is accordingly held up at the London Docks.

The correspondence that has passed between the firm's representatives and the Board of Trade and the Dyestuffs Licensing Committee does not add very much to the facts as briefly set out above, but the terms may be worth quoting. The application for permission to import the consignment in question appears to have been addressed, in the first instance, to the Board of Trade, and is replied to by Mr. Percy Ashley, Principal Assistant Secretary to the Industries and Manufactures Department. Mr. Ashley writes: "With reference to your letter of November 29, regarding three cases of green drawing ink which Messrs. Charles M. Higgins and Co. desire to import, I am directed by the Board of Trade to inform you that the fact that these particular drawing inks may be manufactured from dyestuffs of British origin does not affect in any way the liability of the inks on importation from America to the provisions of the Dyestuffs (Import Regulation) Act, 1920, and it will therefore be necessary for Messrs. Higgins to make application in the usual way for a licence to import the three cases in question, such application being addressed to the Dyestuffs Advisory Licensing Committee, 53, Spring Gardens, Manchester, setting out fully the relevant circumstances."

The British manager of C. M. Higgins and Co. then wrote to the Dyestuffs Licensing Committee stating that at the request of the Board of Trade—though Mr. Percy Ashley's letter is more in the nature of a suggestion than a request—they applied for a licence for three cases of inks lying at the London Docks. "The dye," they wrote, "used in these inks is of British manufacture, having been supplied to us by Messrs. The Clayton Aniline Co., Ltd., whose invoice and receipt we enclose. We also enclose affidavits from our factory that the British dye was used, and we may say incidentally that the dye proved satisfactory and that we propose to employ British dyes for our coloured inks, not only for this country, but to a very great extent for all our inks. We certainly consider that we have fulfilled the object of the Dyestuffs Act

in that we are purchasing British dyes, and we are only making the application for a licence at the express wish of the Board of Trade. Please forward us the licence at your early convenience and return our enclosures."

The application was acknowledged on December 29, when the applicants were informed that their application for a licence to import ink would be considered at the next meeting of the Committee on January 6. On January 9 they were informed that, after careful consideration of all the circumstances, the Committee were unable to see their way to recommend the grant of a licence in this instance.

The Licensing Committee have, of course, not disclosed their reasons in detail, and this naturally leads to some speculation as to what they are. In certain cases—if we remember rightly, incandescent mantles were a case in point—certain articles are not dutiable as a whole, but are dutiable in proportion to the amount of dutiable matter they contain. That is the position under the Safeguarding of Industries Act. Here, however, the imported colouring matter under the Dyestuffs Act is not dutiable at all; the only point is whether it should be allowed to come in. Possibly the Licensing Committee may insist on regarding the ink as a complete article or may hesitate to accept the principle of allowing British colours to be first exported, then to be incorporated in foreign manufactures, and finally to be re-imported as a constituent of foreign imports. There is also, of course, the fact that the Committee have to rely upon the statement of the applicants that the colouring matter is wholly of British origin. There is, in this case, no suggestion of doubt on this point; at the same time, such a precedent would be important. It is a little difficult to judge of the case on the present facts, and perhaps later some fuller light may be thrown on it.

Another I.C I. Absorption

THE suggestion a fortnight ago that the four acquisitions by Imperial Chemical Industries, Ltd., announced then, would inevitably be followed by others is quickly confirmed by the announcement this week of a scheme for the absorption of Elliott's Metal Co., Ltd. The directors of the latter company report to their shareholders that they have entered into a provisional agreement for the acquisition by Imperial Chemical Industries of the ordinary share capital of the company on terms which provide (1) for the exchange of one fully paid ordinary share of £1 and one-half one fully paid deferred share of 10s. in Imperial Chemical Industries for every one ordinary £1 share in Elliott's, Ltd., Imperial Chemical Industries reserving the right, in lieu of issuing a fractional certificate in respect of any half-deferred share, to pay a sum of 5s. in cash; (2) for a dividend of 3 per cent. actual, less tax, to be declared and paid by Elliott's to the existing ordinary shareholders in respect of the five months to December 31 last; and (3) for the retirement of the directors of Elliott's, subject to the appointment of Mr. J. A. Kenrick, the chairman, to serve in an advisory capacity on a committee to be appointed by Imperial Chemical Industries for dealing with the non-ferrous metal trade. The circular adds that the offer becomes effective if accepted by 75 per cent. of the ordinary shareholders, and points out that Mr. T. D. Neal, of Agar, Bates and Neal, Ltd., who has examined the figures of the company and its subsidiaries, supports the directors' recommendation of the acceptance of the offer. Elliott's Metal Co. is a Birmingham concern, holding a controlling interest in William Cooper and Goode, Ltd., Hughes Stubbs Metal Co., Ltd., and Muntz's Metal Co., Ltd. Its issued capital is £668,217, comprising £225,230 in 5 per cent. cumulative preference shares, and £442,987 ordinary shares, both of £1 each. The ordinary shares are currently quoted at round 36s. 6d., which is approximately the market value of the Imperial Chemical shares offered in exchange.

A Census of Chemical Production

THE appearance of the preliminary report of the results, as regards the chemical and allied trades, of the Third Census of Production (1924) gives rise to a number of reflections on the general question of the collection of statistics. In the first place, a grave difficulty which often arises is indicated in a passage in the report: "It will be observed that the classification of the products of the chemical industry, as appearing in the table, is not as extensive as that of the Import and Export List. Although information relating to production was ascertained in accordance with the full detail of that list, separate particulars in regard to the output of a large number of classes of chemical products cannot be furnished in view of the possible disclosure of information relating to the business of individual firms." This is a point which must be carefully kept in mind. Its reality is shown, for example, by the fact that the Bill for the promotion of research in the rubber industry has been opposed in some quarters, not because there is any opposition to research, but because a fear has arisen that the scheme outlined in the Bill might lead to the revelation of the details of the business of some firms. At the same time, there can be no doubt as to the demand for accurate figures regarding the production, import, and export of all chemicals. Anybody who has ever been in the unfortunate position of being regarded as a possible source of information on the subject, knows the details which are sometimes asked for, and the indignation of the inquirer when he is told, quite truthfully, that the figures are unobtainable.

The chemical industry puts some very difficult problems to the statistician. In the present report, the production given is that recorded by firms whose returns were made on schedules for the chemical trades. A large number of chemicals are, however, produced in other industries either as by-products or for the manufacture of other goods. Where possible, the totals are recorded. For example, the total production of sulphate of ammonia from all sources in 1924 was 411,000 tons, as compared with the 264,000 tons returned in the census of 1907. Since then the Billingham synthetic ammonia plant of I.C.I. has got into its stride, and the production of sulphate of ammonia is now far greater than in 1924. The total make of sulphuric acid was returned as 1,025,000 tons, a decline of about 23 per cent. on the 1907 production. The main reason given is the decline in

the production of superphosphates. Coal tar products in 1924 show an enormous increase both in quantity and value over the returns of 1907.

Other details, comparing 1924 with 1907, are as follows:—The production of bleaching powder decreased from 109,000 tons to 65,800 tons, while the value increased from £444,000 to £574,000, while other sorts of bleaching materials increased in quantity from 16,000 tons to 32,200 tons, and in value from £77,000 to £569,000; borax decreased both in quantity and value; copper sulphate decreased from 63,000 tons to 37,800 tons; the value of compressed gases was multiplied by seven; the quantity of hydrochloric acid remained almost stationary, but its value was nearly trebled; wood distillation products increased in value from £46,000 to £111,000; finished coal tar dyes increased both in quantity and value, from 139,000 cwt. to 374,400 cwt. and from £373,000 to nearly £4,000,000. Taking chemical manufactures as a whole, there was an increase in value from about £13,000,000 to £28,000,000 in selling value, while in the dyes and dyestuffs the increase was from £821,000 to over £6,000,000. Adding to these values the figures for drugs, medicines, etc., and for miscellaneous products, we find that the total value increased from £24,000,000 to nearly £56,000,000, while the net output in 1924 (excess of value over cost of materials), was £25,289,000. The number of persons employed increased from about 52,000 to over 68,000, while the net output per head was almost exactly doubled (£369 and £183). Incidentally, the 1924 total of employees is divided into 56,701 operative staff and 11,875 as management, clerical, and technical staff; while in 1907 there were 45,679 wage-earners and 6,166 salaried persons. It would be interesting to know how these figures were affected by the actual increase in the number of chemists employed. Finally, as regards power, there was an increase of engine horsepower from 108,211 to 159,151; the capacity of electric generators increased from 17,566 to 76,018 kw.

The elaboration of the detailed meanings of these values must be left to the statistician and the economist. They do, however, bear impressive evidence to the immense growth of the chemical industry during the present century. It is probable that since 1924 the rate of increase, at any rate in normal years, has been greater than previously. The momentous events which have occurred in British chemical industry in the last year render prophecy somewhat dangerous, but it is safe to say that the increase between the years 1924 and 1941 will be much greater than that between 1907 and 1924.

In This Week's Issue

THE Board of Trade returns for December indicate a considerable all-round improvement in chemical overseas trade. (p. 42).

The work of the Paint and Varnish Committee of the B.E.S.A. is reviewed (p. 26).

It is rumoured that the I.G. Farbenindustrie is to call a world conference of all interested in the production of nitrogenous compounds (p. 32).

Imperial Chemical Industries, Ltd., is to absorb a Midland metal company (p. 30).

New and improved apparatus for laboratory and industrial use was shown at the exhibition of the Physical and Optical Societies (page 29).

Books Received

THE TEXTILE RECORDER YEAR BOOK, 1928. Manchester: John Heywood, Ltd. Pp. 1004. 8s. 3d.

ACETATE SILK AND ITS DYES. By Chas. E. Mullin. London: Constable and Co., Ltd. Pp. 472. 26s.

REPORT ON THE ECONOMIC AND COMMERCIAL SITUATION OF AUSTRALIA, TO JUNE, 1927. By R. W. Dalton. London: H.M. Stationery Office. Pp. 102. 3s.

THE REACTIVITY OF COKE. FUEL RESEARCH TECHNICAL PAPER No. 18. Department of Scientific and Industrial Research. London: H.M. Stationery Office. Pp. 32. 1s.

THE MINERAL INDUSTRY OF THE BRITISH EMPIRE AND FOREIGN COUNTRIES. SALT. Imperial Institute. London: H.M. Stationery Office. Pp. 123. 2s.

REPORT ON THE FINANCIAL AND COMMERCIAL SITUATION OF AUSTRIA, TO OCTOBER, 1927. By O. S. Phillpotts, O.B.E. London: H.M. Stationery Office. Pp. 48. 1s. 6d.

The Calendar

1928		
Jan. 16	University of Birmingham Chemical Society: Presidential Address by Professor W. N. Haworth.	University, Birmingham.
16	Chemical Industry Club: "The City Churches." Joseph Hill. 8 p.m.	2, Whitehall Court, London.
16, 23 and 30	Royal Society of Arts: "The Scientific Foundations of the Refining of Petroleum." Dr. A. E. Dunstan. 8 p.m.	John Street, Adelphi, London.
17	Society of Chemical Industry (Glasgow Section): "The Fuel Problem." Dr. C. H. Lander. 7 p.m.	39, Elmbank Crescent, Glasgow.
17	Society of Chemical Industry (South Wales Section): "Vitamines and Diet." John Pryde. 7.30 p.m.	Technical College, Cardiff.
18	Society of Glass Technology: 2.30 p.m.	Manchester.
18	Institute of Metals (Swansea Section): "Some Interesting Properties of Alloys of Nickel." W. T. Griffiths. 7 p.m.	Thomas Café, High Street, Swansea.
19	Optical Society: Ordinary Meeting. 7.30 p.m.	Imperial College of Science.
19	Chemical Society: 8 p.m.	Burlington House.
19	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): Discussion on "The Separation of Solids and Fluids." 7.30 p.m.	North British Station Hotel, Edinburgh.
19	Institute of Metals (Birmingham Section): "Heat Resisting Alloys." T. H. Turner. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
20	Society of Dyers and Colourists (Scottish Section): Dr. H. Levinstein.	Glasgow.
20	Society of Chemical Industry (Liverpool Section): "The Production and Refining of Cane Sugar." Geoffrey Fairrie. 6 p.m.	University, Liverpool.
20	West Cumberland Society of Chemists and Engineers: "The Lubrication of the Automobile." O. T. Jones. 7 p.m.	Workington.
20	Society of Dyers and Colourists (West Riding Section): Annual Dance.	Queen's Hall, Bradford.
20	Society of Dyers and Colourists (Manchester Section), Joint Meeting with the Manchester Section of the Oil and Colour Chemists' Association: "Azoic and Other Insoluble Colours." Dr. A. E. Everest and J. A. Wallwork.	Milton Hall, Deansgate, Manchester.
21	Society of Chemical Industry (Birmingham Section): Chemistry Dinner.	Queen's Hotel, Birmingham.
24	Institute of Chemistry. Joint meeting with Bristol University Chemical Society: "What has become of Inorganic Chemistry?" Professor Arthur Smithells. 5 p.m.	Chemical Dept., University, Bristol.
25	Society of Dyers and Colourists (Midlands Section). Joint Meeting with the Foreman Dyers' Guild: "Dyeing Hosiery containing Celanese." G. H. Ellis. 7.45 p.m.	The Globe Hotel, Silver Street, Leicester.

Paint and Varnish Work of the B.E.S.A.

The Need of Financial Support

THE growth of the paint and varnish industry during the last decade led to much keener competition, more cutting of prices, and in some cases to reduction in quality to meet competition. As an inevitable consequence, buyers lost confidence, which in its turn resulted in the creation of new specifications and the tightening up of existing specifications, and eventually to the "guarantee" method of contract which was so disliked in the trade. As a result, a condition obtained in which a paint manufacturer had to tender to specifications, each of which differed from the other as regards testing and type, in some instances reliance being placed upon chemical composition, in others on physical properties allied to chemical composition.

A Representative Committee

As a result of these difficulties the National Federation of Paint and Varnish Manufacturers got into touch with the British Engineering Standards Association and through that Association with the consumers themselves, with the object of drawing up a series of British Standard Specifications for paints, varnishes, and painting materials that would be universally applicable to Government departments, railway companies, municipal authorities, and other large users.

A conference was held in January, 1924, at which the whole question was discussed and, as a result, a Committee was formed to deal with the matter constituted as follows:—

Dr. J. Newton Friend (chairman); Mr. J. R. Sivess, representing the Admiralty; Mr. A. V. Elsden, War Office; Dr. G. Rudorf and Dr. J. E. Ramsbottom, Air Ministry; Mr. T. A. Moore, India Office; Mr. D. Morrell, Office of Works; Mr. R. H. Harry Stanger, Crown Agents for the Colonies; Mr. W. H. Winny, G.P.O.; Mr. F. E. Wentworth-Sheilds, Institute of Civil Engineers; Mr. Asa Binns, Institute of Mechanical Engineers; Dr. R. E. Stradling, Department of Scientific and Industrial Research; Mr A. S. Jennings, Incorporated Institute of British Decorators; Mr. F. A. Maythorn, Institute of British Carriage and Automobile Manufacturers; Mr. Richard Williamson (R. H. Williamson and Son); Institute of Naval Architects; Mr. H. D. Searles-Wood, Royal Institute of British Architects; Mr. R. W. Reid and Mr. G. Ellson, Railway Companies of Great Britain; Mr. J. H. Humphryes, Bridge and Constructional Ironwork Association; Mr. F. W. Loasby, National Federation of Building Trades Employers; Mr. F. Allen, Dr. C. B. Beavis, Mr. M. Harrison, Mr. S. K. Thornley, Mr. J. B. Graham, Dr. R. S. Morrell, Dr. H. H. Morgan and Dr. L. A. Jordan, National Federation of Associated Paint, Colour and Varnish Manufacturers; Mr. C. A. Klein, Mr. J. N. Tervet and Dr. H. H. Morgan, Oil and Colour Chemists' Association; Dr. G. Barr, National Physical Laboratory; Mr. G. A. Gale, National Federation of House Builders; Mr. W. H. Cantrill, National Federation of Master Painters and Decorators of England and Wales; Mr. A. R. Everest, B.E.A.M.A.; Mr. C. W. Price, Home Office; Mr. G. G. Elliott, High Commissioner for the Union of South Africa; Mr. T. H. Bowles, Government Laboratory; and Mr. W. C. Fenwick, Contracts Department, Air Ministry.

The Scope of the Inquiry

At the outset of the work it was evident that before satisfactory specifications for paints and varnishes could be prepared it would be necessary to deal with the raw materials used in their manufacture, and the work was consequently divided up into four sections as follows:—

1. Raw materials.
2. Enamels and ready mixed oil and varnish paints.
3. Varnishes.
4. Bituminous and water paints.

Committees were formed dealing with the first three of these items, and they have sat continuously since their appointment.

Table of B.E.S.A. Paint and Varnish Specifications

Specifications Published

Oils, Diluents, Etc.	Pigments, Extenders, Etc.	Oil Pastes.	Ready Mixed Paints.	Varnishes.
Refined Linseed Oil (242)	Red Lead (217)	Zinc Oxide (273)	Genuine White Lead (261)	Exterior Oil Varnish (257)
Turpentine Type 1 (244)	Genuine Dry White Lead (239)	Genuine White Lead (241)	Tinted White Lead (262)	Interior Oil Varnish (256)
Boiled Linseed Oil (259)	Asbestine (255)	Lithopone (297)	Zinc Oxide (277)	Flatting or Rubbing Oil Varnish (258)
Raw Linseed Oil (243) ..	Zinc Oxide (Types 1 and 2) (254)	Red Oxide of Iron (Class 1) (298)	Tinted Zinc Oxide (278)	Extra Hard Drying Oil Varnish (274)
White Spirit (Types 1 and 2) (245)	Barytes (260)	Red Oxide of Iron (Class 11) (299)	Black (294)	
Gold Size (311).....	Red Oxides of Iron (272	Black (197)	Green (292)	
	Lead Chromes (282)	Brunswick or Chrome Green (304)	Red Oxide of Iron (295)	
	Prussian Blue (283)			
	Lithopone (296)			
	Carbon Black (284)			
	Lamp Black (287)			
	Vegetable Black (286)			
	Bone Black (285)			
	Mineral Black (288)			
	Brunswick or Chrome Greens (303)			
	Blanc Fixe (281)			
	Ultramarine Blue (314)			
	Siennas (312)			
	Umbers (313)			
	Black Oxide of Iron (306)			
	Indian Reds (305)			
	Non-Setting Red Lead (315)			

Specifications Under Consideration

Liquid Driers	Powdered Aluminium	"Omnibus" Specification	Undercoats
Turpentine Type 2	Titanium Oxide		Purple Brown Oxide of Iron
Paste Driers	Chromium Oxide		Bright Red
Tung Oil	Antimony Oxide		Chocolate
	Ochre		Non-Setting Red Lead
	Vandyke Brown		Lithopone
	Silica		Tinted Lithopone
	Zinc Chromes		
	Purple Oxide of Iron		
	Terra Alba		
	Venetian Red		
	Paris White		

Some idea of the volume of work which has been dealt with by these Committees may be obtained from the fact that, as shown in the table, 46 specifications already have been published while there are still another 24 in hand. In addition, attention is now being given to the preparation of specifications for gloss paints and enamels.

During the preparation of the specifications the question of standard colour patterns was raised, and in March, 1925, a Committee was formed within the Paint and Varnish Section to endeavour to obtain a standard series of colour patterns and names generally agreed upon amongst manufacturers, and to analyse these colours by some standard colorimetric method. It was also agreed to attempt some classification of colours according to permanancy to light. This Committee has now completed the first stage of the work and a proposed standard series of colour patterns and names has been circulated to the trade for consideration.

The Specifications

The specifications which have been prepared, specify limits for the chemical composition and the physical properties of the materials, but one of the main difficulties with which the Committees have had to contend has been the fact that there has been little available data correlating the physical properties and chemical composition of paints and varnishes and their ingredients with their performance in actual use.

The preparation of the specifications has involved the consideration of an enormous number of problems dealing with this question, a large number of which have been dealt with co-operatively by the members of the Committee in their own laboratories. Indeed, it is difficult to estimate the value of the work which has been carried out in this manner by the members, without fee or recompense, often at considerable personal inconvenience to themselves. Some of the problems, however, required research of too fundamental a character to be dealt with in this way, and these have been referred to the recently-formed Research Association of the Paint and Varnish makers with which the closest co-operation is maintained, a special Research Committee having been appointed to co-ordinate the research required in the preparation of the specifications.

The Specifications, after they have been tentatively completed by the drafting Committees, are circulated to all interested organisations of both makers and users for their critical consideration and comment. At the same time they are also circulated to the standardising bodies in our Colonies, who are in close contact with the parent body in this country. In this connection it is of interest to note that the Australian Commonwealth Engineering Standards Association have recently formed a Paint and Varnish section which has just issued specifications for Linseed Oil, Turpentine, White Spirit, and Genuine White Lead. As in the case with all the publications of the Australian Engineering Standards Association, the specifications closely follow the British Standard Specifications the only differences being where Australian climatic conditions have necessitated alterations.

How Other Industries Have Benefited

The following extract from the *Times Trade and Engineering Supplement* of November 26, 1927, explains how the work of these committees has been of benefit to industry outside the actual preparation of the specifications :—

> " The committee and panels of the British Engineering Standards Association, which have been responsible for drafting the standard specifications, have brought together producers and consumers of paint and varnish in a way which has not previously been possible. This has been of benefit to all concerned ; difficulties have been brought to light and discussed freely, and a series of specifications, for most of the pigments, paints and varnishes in general use, has been prepared. The deficiencies of these specifications, in certain respects, have been fully realised by those who have been responsible for their production. Even in the case of old-established materials, many gaps in knowledge have become apparent. This series of specifications represents, however, the first serious attempt at standardisation of paints and paint materials in Great Britain, and it is perhaps the most comprehensive series that has yet appeared in any country."

Perhaps the most important result of the preparation of the series of B.S. Specifications for painting materials, paints and varnishes is, that it discourages the use of varying specifications by individual bodies and persons, and equalises the conditions under which the manufacturer has to tender. The case is analogous to that of Portland Cement, for which a British Standard Specification was published in 1904. In 1907 a leading cement manufacturer made the following statement in regard to its adoption :—

> " The result of the introduction of the standard specification has no doubt been to save a great deal of inconvenience to the individual cement manufacturer in reducing to a minimum the variety of odd specifications, some of them of the most peculiar and difficult character, with which he formerly had to deal, and from that point of view it is much more plain sailing for him in the production of the article which he supplies.
>
> " Speaking for ourselves, we have welcomed the introduction of the British Standard Specification which is now being so largely adopted by the engineer and the consumer of cement, as in these hard times of competition it has equalised up the conditions under which the various manufacturers of cement have had to quote, and in specifying cement to the British Standard Specification, the consumer, in dealing with the tenders that he may receive for the supplies of same, knows that all the people tendering are doing so on even terms."

The products of the British Paint and Varnish industry occupy the leading place in the world's markets. British products are bought in preference to the products of other countries, and the use of the British Standard Specifications will tend to consolidate that position. The term " British Standard " has a very real value throughout the world as a hall mark of British quality, and the issue of these national specifications gives the industry a considerable advantage in their export trade, particularly with such far away markets as those in South America and equally distant countries.

Hampered by Lack of Funds

The scope of the work has, however, been seriously limited by financial considerations, as the B.E.S.A. in its work of promoting the welfare of British industry through simplifying tendering and providing a reasonable standard of quality, is entirely dependent upon voluntary contributions, and it is not yet known whether funds will permit of the completion of the programme originally outlined for the paint and varnish section. It has been estimated that the total capital value of the paint and varnish industry is something of the nature of £15,000,000 with an annual turnover of about £33,000,000 while the export trade alone in Paints and Varnishes is about 3,000,000 cwt.

The National Federation of Paint and Varnish Manufacturers has for the past three years contributed towards the cost of this work and a number of individual manufacturers have also associated themselves with the work by becoming contributing members of the Association. It seems scarcely credible, therefore, that an industry of this size should be unable to find the comparatively small amount of additional funds required to carry out the programme of specifications when such benefits are to be obtained in return for this modest expenditure. The balance required to cover the expenditure is at present being found by the general funds of the Association subscribed by other branches of industry. As the value of the work becomes more clearly understood and appreciated, doubtless the industry will be just as ready to bear its proper share as are other sections of industry who are co-operating with the B.E.S.A. in this national movement which is doing so much towards assisting our industries to introduce economies in manufacture as well as compete successfully in many markets abroad.

Experiments with Drugs in Malaya

A NUMBER of drugs of minor importance, totalling about ten sorts, are being grown at the Serdang Experimental Plantation, Federated Malay States, and inquiries for several of these have recently been received from England. A sample of Ipecacuanha roots was reported on favourably, and an offer made to purchase crops produced. Three species of Chaulmoogra oil trees are under cultivation for the production of seeds in the leper asylums in Malaya. It is hoped to have 30 acres planted with each species.

Production of British Chemicals in 1924

Results of the Census

The Board of Trade has just published Preliminary Report No. 30 of the Third Census of Production, 1924, dealing with the chemical and allied trades among other things. Below are given details of the production of chemicals in the United Kingdom in 1924, and a comparison, where possible, with the census made in 1907.

THE figures shown for each class of product represent that part of the output of the producing firms which was sold as such or added to stock at the end of the year; the quantity of any product made and used by the same firm in the manufacture of other goods is not included. All manufacturers were, however, required to furnish a statement of the total quantity of their output of chemical products, including that portion, if any, which was used in further manufacture in their own works. In the case of the great majority of the products specified in the above statement the quantity used for further manufacture by the firms who made them was quite small, and the output shown as sold or added to stock expresses almost completely the total quantity made.

PRODUCTS MADE FOR SALE OR STOCK.

	1924		1907	
Chemical Manufactures—	Quantity. Tons.	Selling Value. £	Quantity. Tons.	Selling Value. £
Acids:				
Acetic	3,000	95,000	6,000	91,000
Sulphuric	616,900	2,136,000	475,000	861,000
Hydrochloric	207,200	708,000	198,000	241,000
	lb.			
Salicylic	1,207,000	84,000	—	—
	cwt.			
Tartaric	62,000	351,000	—	—
Other Descriptions	—	616,000	—	—
Aluminium Compounds:				
	tons			
Sulphate of Alumina	59,000	337,000	72,000	213,000
Other Sorts	20,400	233,000	—	—
Ammonia Compounds:				
Carbonate	3,700	120,000	—	—
Chloride (Muriate)	8,800	245,000	—	—
Sulphate	41,800	507,000	28,000	319,000
Other Ammonium Compounds	21,500	293,000	—	—
Arsenic and Compounds	1,200	59,000	2,000	55,000
Barium Compounds	17,800	194,000	—	—
Bleaching Materials:				
Bleaching Powder	65,800	574,000	109,000	444,000
Other Sorts	32,000	569,000	16,000	77,000
Borax	7,600	169,000	14,000	205,000
	cwt.			
Camphor	1,400	39,000	—	—
Compressed Gases	—	845,000	—	—
	lb.			
Chloroform	545,000	91,000	—	—
Coal Tar Products:				
	cwt.			
Anthracene	19,900	11,000	—	—
	galls.		galls. (plus toluol)	
Benzol	11,154,000	835,000	3,278,000	120,000
	galls.		galls.	
Carbolic Acid (Phenol)	938,000	81,000	670,000	44,000
	cwt.		cwt.	
	109,700	208,000	149,000	145,000
	galls.		galls.	
Naptha	3,277,000	198,000	4,327,000	150,000
	cwt.			
Naphthalene	125,600	54,000	—	—
	galls.		galls.	
Tar Oil, Creosote Oil, etc.	50,501,000	1,596,000	49,022,000	545,000
Toluol	305,000	27,000	—	—
Other Sorts	—	431,000	—	387,000
Collodion	6,800	14,000	—	—
	tons		tons	
Copper, Sulphate of	8,700	183,000	26,000	598,000
Disinfectants, Insecticides, etc.	—	441,000	—	137,000
	galls.			
Ether, Sulphuric	119,000	62,000	—	—
Iodine and Iodides, not elsewhere specified	lb. 199,000	173,000		
	cwt.		—	—
Lead Compounds	147,400	302,000	—	—
	tons			
Litharge	6,100	249,000	—	—
Magnesium Compounds (including Chloride and Sulphate)	21,800	313,000	—	—
	galls.			
Methyl Alcohol	211,000	50,000	—	—
Potassium Compounds:	tons			
Chromate and Bichromate	54,200	119,000	—	—
	cwt.			
Cyanide	3,000	20,000	—	—
Iodide	2,100	196,000	—	—
Other Sorts	—	90,000	—	—
	tons		tons	
Sodium Compounds	1,493,000	9,169,000	682,000	3,317,000
Synthetic Organic Chemicals for Photographic purposes	cwt. 300	15,000	—	—
Tartar, Cream of	49,700	214,000	—	—
Tin Salts	3,300	21,000	—	—
Wood Distillation Products:	tons			
Acetate of Lime	1,200	15,000	—	11,000
Other	—	96,000	—	35,000
Zinc Oxide:				
Quantity stated	14,300	460,000	—	—
Quantity not stated	—	270,000	—	—
Chemicals, unenumerated	—	3,829,000	—	3,066,000
Total—Chemical Manufactures	—	28,007,000	—	12,947,000
Dyes and Dyestuffs—				
Intermediate Coal Tar Products	cwt. 200,500	1,174,000	—	—
Finished Dyestuffs obtained from Coal Tar	374,400	3,950,000	139,000	373,000
Extracts for Dyeing	71,900	155,000	—	—
Extracts for Tanning	1,316,000	798,000	—	—
Total—Dyes and Dyestuffs	—	6,077,000	—	821,000
Drugs, Medicines and Medicinal Preparations, etc.—	lb.			
Novocain, Eucain, etc.	14,000	42,000	—	—
Other Pharmaceutical Chemicals	—	680,000	—	—
Miscellaneous Products—	galls.			
Coal Tar	16,810,000	545,000	—	80,000
	tons 211,100	1,141,000		
Coke	139,600	170,000	—	—
Finishing Materials for the Textile Trades	—	252,000	—	353,000
Boiler Composition and Disincrustants	—	298,000	—	62,000
	tons		tons	
Pitch	310,400	958,000	537,000	684,000
Sulphur	7,300	58,000	31,000	148,000
Fertilisers, not elsewhere specified: Superphosphates	72,400	208,000	—	—
Guano, manufactured, and Compound Manures	60,000	409,000	—	—
Flavouring Essences, etc.	352,000	—	—	—
Other Products	2,500,000	—	—	—
Total—Miscellaneous Products	7,214,000	—	—	5,725,000
Work done for the Trade (*e.g.*, Drug Grinding	62,000*	—	—	—
Total Value of Goods Made and Work Done	55,818,000	—	—	24,025,000

Products Made for Immediate Use

In the following items an appreciable part of the total make appears to have been used by the producing firms in the manufacture of other goods:—

Products.	Total quantity made in Chemical Trades.	Sold or added to stock.	Used by makers for further manufacture.
Acids:—			
Hydrochloric	221,100 tons	207,200 tons	13,900 tons
Salicylic	1,703,000 lbs.	1,207,000 lbs.	496,000 lbs.
Sulphuric	799,800 tons	616,900 tons	182,900 tons
Barium Compounds	29,900 tons	17,800 tons	12,100 tons
Borax	8,300 tons	7,600 tons	700 tons
Litharge	8,100 tons	6,100 tons	2,000 tons
Intermediate Coal Tar Products used in the manufacture of Dyes	560,400 cwt.	200,500 cwt.	359,900 cwt.

Chemicals Produced in Other Industries

Apart from the above returns, recorded in schedules for the chemical trades, many of the goods mentioned are made as by-products of other industries or are produced by them. Among these are coal tar products, sulphuric acid, sulphate of ammonia, copper sulphate, and disinfectants. The coal tar products were produced in gas and by-product works, etc., and the aggregate production was as follows:—

Coal Tar Products.	1924. Quantity.	1924. Value. £	1907. Quantity.	1907. Value. £
Anthracene	86,000 cwt.	34,000	32,000 cwt.	10,000
Benzol	50,959,000 galls.	2,770,000	6,327,000 galls.	189,000
Toluol	673,000 galls.	56,000		
Carbolic Acid	140,000 cwt.	234,000	171,000 cwt.	171,000
(Phenol)	1,108,000 galls.	100,000	689,000 galls.	45,000
Naphtha	5,659,000 galls.	310,000	4,617,000 galls.	158,000
Naphthalene	325,000 cwt.	116,003	299,000 cwt.	45,000
Tar Oil, Creosote, and other heavy Coal Tar Oils	88,947,000 galls.	2,720,000	66,712,000 cwt.	702,000

As regards sulphuric acid, the total make of tar distillers and manufacturers of dyes, explosives, and fertilisers was 1,025,000 tons in 1924 (1912, 1,190,000; 1907, 1,459,000). The total output of sulphate of ammonia in 1907 at all classes of works was returned as 264,000. The census of 1924 produced the following returns:—

	Tons.
By gas undertakings	127,000
By firms operating by-product plants at collieries and blast furnaces	185,000
By manufacturers of chemical products	41,800
By oil refiners	51,600
By manufacturers of fertilisers	5,700
Total	411,100

In addition to the output of 8,700 tons of copper sulphate returned on schedules for the chemical trades, 29,100 tons were produced by firms engaged in the non-ferrous metal industries, the aggregate production being therefore 37,800 tons (1907, 63,000 tons).

Exports and Imports

In the following table the production of certain important classes of goods which are believed to be covered reasonably completely by the figures given in the foregoing statement is compared with exports and net imports :—

Kind of Goods.	Production.	Exports.	Net Imports.
Acids—	Tons.	Tons.	Tons.
Sulphuric	1,025,000	1,600	—
Hydrochloric	221,000	100	—
	lbs.	lbs.	lbs.
Salicylic	1,703,000	185,000	69,000
	cwt.	cwt.	cwt.
Tartaric	62,100	13,900	29,700
Coal Tar Products—	galls.	galls.	galls.
Benzol	50,959,000	1,159,000	4,713,000
	tons	tons	tons
Sulphate of Ammonia	411,100	278,000	100
Tar, Oil, Creosote and Other Heavy Coal Tar Oils	galls. 88,947,000	galls. 45,322,000	galls. 403,000
Bleaching Materials—	tons	tons	tons
Bleaching Powder	65,800	14,800	3,400
Other Sorts	32,200	500	700
Sodium Compounds	1,493,000	500,900	94,200
	cwt.	cwt.	cwt.
Finished Dye Stuffs	374,400	59,100	70,200
Proprietary Medicines	£6,694,000	£1,143,000	£160,000

Output and Employment

The net output of the factories and workshops covered by the foregoing statement was £25,289,000 in the year 1924, that sum representing the amount by which the total value of the output exceeded the cost of materials and the value of work given out. The net output per head of persons employed in 1924 was £369, and in 1907 £183. The net output in 1924 per head of persons employed by firms who were mainly or entirely engaged in the manufacture of coal tar products was £368 ; of dyes and dyestuffs, £384 ; of heavy chemicals, £314 ; and of drugs and medicines, £502.

The average number of persons employed during the year 1924 at the factories and workshops to which the foregoing statement of output relates was 68,576, of whom 56,701 were recorded as operative staff and 11,875 as management, clerical, and technical staff. In the year 1907 the number of persons employed was returned as 51,845, of whom 45,679 were wage-earners and 6,166 were salaried persons.

The Exhibition of the Physical and the Optical Societies

New Apparatus Shown at Imperial College

Notes are given below of some of the new apparatus, and experiments which were shown at the 18th annual exhibition of the Physical Society and Optical Society at the Imperial College of Science and Technology, London, on Tuesday, Wednesday, and Thursday of this week.

Of the apparatus, both for industrial and research application, shown at the 18th exhibition of the Physical Society and the Optical Society at Imperial College, South Kensington, this week, some was new and some showed improvement on older models, but mention of either must, of necessity, be brief. The Tintometer, Ltd., of the Colour Laboratory, Salisbury, demonstrated Lovibond's Tintometer, and a new apparatus, the Rosenheim-Schuster Colorimeter, based on Lovibond's colour system. The apparatus, which is of particular interest to bio-chemists, has the advantages of simplicity of working and rapidity of matching.

Precision Instruments

In the optical and microscopical sections a large number of firms were represented. A new microscopic illuminator, whereby colloids are brilliantly illuminated on a black background, was an interesting feature of the exhibit of C. Baker, of High Holborn. A low-priced spectrograph for industrial use, with which a complete spectrum can be obtained on a quarter plate, was shown by Bellingham and Stanley, Ltd., who were also showing an improved model refractometer in which a carefully-designed screw motion moves the prism box to which the divided scale is attached. This motion enables the border line to be adjusted to the cross-wires with ease and precision. Other exhibits included polarimeters containing water-jacketed tubes of cementless construction. Two of the latest spectrographs, illustrating the trend of design towards greater stability and simplicity, were shown by Adam Hilger, Ltd., who had on view also a complete outfit for quantitative metallurgical analysis.

A new Leitz metallurgical microscope and camera for workshop use was to be seen at the stand of Ogilvy and Co., of Mortimer Street, London; this apparatus is remarkably compact and robust. A new stereoscopic binocular microscope, a modification of the Greenough type, was among the instruments exhibited. James Swift and Son, Ltd., had a large range of microscopes, and Carl Zeiss (London), Ltd., showed, besides numerous microscopes, a range of refractometers and polarimeters. An instrument of interest, shown by L. Oertling, Ltd., was a torsion balance which gives direct readings of from 0 to 500 mg., and the instrument, being enclosed in a metal case, is free from disturbance by dust. Among other instruments displayed by this firm were a chemical balance with "chainomatic attachment," and various other balances, including one designed for the Royal Arsenal Research Department.

Vacuum Apparatus

The Pulsometer Engineering Co., Ltd., demonstrated a model of the "Geryk" range of vacuum pumps, which are made either of the reciprocating or rotary pattern. The single stage rotary pumps are capable of producing a vacuum of 0·01 millimetre off perfection, while in series, 0·005 millimetre may be obtained, it is stated. The single cylinder reciprocating pumps in series are tested to a vacuum of not less than 0·00001 millimetre.

Rotary vacuum pumps representing the latest advances in the production of high vacua between the limits of 0·02 and 0·0001 millimetre, many actually in operation, attracted considerable attention at the exhibit of W. Edwards and Co. Considerable interest was taken in a direct reading high vacuum gauge shown by the same firm, which is simple enough in operation for use in industry. It consists of a modified Pirani gauge in which a wire is heated by an accumulator, and to which is attached a thermo-junction. These elements are sealed into a tube joined to a vacuum system and connected with an indicating instrument. The Mullard Radio Valve Co., Ltd., were showing a Holweck molecular pump which is stated to be especially suitable for laboratory work, and with a backing pressure of 1·0 millimetre can exhaust to such a low reading as 0·000015 millimetre.

Laboratory Apparatus

A new bacteriological porcelain filter for small quantities of fluid was exhibited by John J. Griffin and Sons, Ltd., and Baird and Tatlock, Ltd., who also showed an improved Freas vacuum drying oven. Apparatus for hydrogen-ion concentration measurements, electric ovens for drying purposes, and electric furnaces were exhibited by A. Gallenkamp and Co., Ltd. One of the most interesting of the exhibits of Kelvin, Bottomley and Baird, Ltd., was a water steriliser employing ultra violet rays from a mercury vapour lamp as the sterilising agent. Water is run round a spiral track so that a long exposure is given. An automatic valve in series with the lamp is incorporated to cut off the water flow in case of current failure.

Meters and Control Apparatus

The exhibit of the Electroflo Meters Co., Ltd., comprised various works control instruments. Of interest was the new efficiency meter, the chief feature of which is a recorder employing a continuous chart on which may be recorded any comparison of steam, water and air flow, temperature, pressure

and CO_2, thus giving an indication of boiler efficiency in any particular circumstances. A display of control instruments was also given at the stand of the Cambridge Instrument Co. Here a demonstration was given of the automatic humidity control, which has been developed in conjunction with the British Research Association for the Woollen and Worsted Industries, and has been designed for ensuring constant humidity in rooms where operations are in progress with hygroscopic materials. Another interesting demonstration was that of a temperature deviation indicator with signal lamps. Apart from showing on the dial the deviation from the correct temperature, an indication of this is also given by three coloured lamps. A similar apparatus, a CO_2 indicator, has an illuminated hand working in conjunction with signal lamps.

Automatic temperature control in conjunction with a signalling lamp was demonstrated by the Foster Instrument Co., who were also showing many lines in control apparatus such as surface heat loss meters, distance thermometers and pyrometers, thermo couple pyrometers, and several recording instruments. Many types of thermometer were shown by Negretti and Zambra.

New types of recording instruments were shown by the Stonebridge Electrical Co., Ltd. These instruments are of the dynamometer type and are suitable for use on A.C. or D.C. circuits, and can be supplied in the form of power factor meters, temperature meters, and as electrical meters. The main features of this instrument are its small size, extremely long scale, continuous roll chart, straight hour lines, and comparative immunity to frequency change.

Research Section

In the research and experimental section a demonstration was given by Professor G. I. Finch of the Schönherr-Hessberger arc, which is employed in the direct fixation of atmospheric nitrogen. It is a standing arc, supplied with alternating current at 3,000 to 5,000 volts, 50 cycles. It is steadied and its power factor is improved to nearly unity by means of suitable series inductance. The exhibit from the Brown-Firth research laboratories contained a display of the latest developments in non-corrodible steels and heat-resistant steels. Interesting from a research and technical standpoint were samples showing the oxidation at high temperatures of various steels, and also samples demonstrating the synthesis of heat-resistant steels by the addition of various alloying elements, as discussed by Dr. W. H. Hatfield in a paper before the Iron and Steel Institute in May of last year. A feature of the exhibit was a wire of Thos. Firth and Sons' "H.E. Crown" heat-resistant steel, maintained at 800° C. and supporting a weight equivalent to 3 tons per sq. in. of cross sectional area.

Imperial Chemical's Offer to Elliott's Metal Co.

A CIRCULAR has been issued by the directors of Elliott's Metal Co., Birmingham, stating that they were approached recently by Imperial Chemical Industries, Ltd., with a view to the acquisition by that company of the ordinary shares in Elliott's, which owns the whole share capital of Muntz's Metal Co., Ltd., William Cooper and Bude, Ltd., and Hughes Studds Metal Co., Ltd. A definite offer has now been received to acquire the ordinary shares. The agreement provisionally provides for the acquisition by Imperial Chemical Industries from the ordinary shareholders of Elliott's who may consent thereto of all their ordinary shares in Elliott's in consideration of the allotment to them of one fully paid ordinary share of £1 and half one fully paid deferred share of 10s. in Imperial Chemical Industries for every one ordinary share of £1 in Elliott's.

It was rumoured at Swansea on Tuesday that Imperial Chemical Industries, Ltd., are about to absorb the Swansea and Midlands firm of British Copper Manufacturers, Ltd. The latter in normal times employs 3,000 men, and some years ago absorbed various copper firms of the district.

Export of Drugs Prohibited except under Licence

THE following drugs are included in a list, dated January 1, 1928, of goods prohibited to be exported except under licence: cocaine, diamorphine, ecgonine, heroin, and salts thereof, and any substances containing not less than 0·1 per cent. thereof, morphine and its salts and substances containing not less than 0·2 per cent. of morphine, and opium.

Mr. Ernest Hickson's Jubilee

DISTINGUISHED in the chemical and dyestuffs trade of Yorkshire, and a stalwart from the beginning in movements having for their object the advancement and dissemination of scientific knowledge in the dyeing industry, Mr. Ernest Hickson completed on December 31 fifty years in the trade. He first became associated with it on December 31, 1877, on his appointment as foreign correspondent to Brooke, Simpson and Spiller, of Hackney, Warwickshire, subsequently occupying a seat on the board after its conversion into a limited company. Later he established in Bradford the now well-known business

which in December, 1926, was removed to Castleford, where the important dye and intermediate concern, Hickson and Partners, Ltd., is established, and of which he was founder and is chairman. Concurrently with his many business activities, he has been from its inception a vigorous upholder of the Society of Dyers and Colourists, and has the honourable distinction of having his name inscribed on the roll of presidents. His name will be long associated with the production of the Colour Index; he it was who first moved the Society of Dyers and Colourists to take up the question of the standardisation of the methods of grading the fastness of dyestuffs.

Law and Industrial Chemistry

AN indication that the executive control and administration of chemical works is passing into the hands of chemists is furnished by the announcement that the Sir John Cass Technical Institute has added a short course of lectures on "Law as Related to Industrial Chemistry" to its curriculum. The governing body of the Institute have arranged for the lectures to be given by a professional chemist and practising barrister (Mr. G. S. W. Marlow, B.Sc., F.I.C.), and by holding them in the evenings (Tuesdays at 7 p.m.) they have made it possible for those already engaged in industrial work to attend. The necessity for some legal knowledge by anyone holding a responsible executive appointment is too obvious to require comment, and the course should prove popular both with chemists already engaged in industrial work and with students preparing for an industrial career. At the first lecture, which is to be given on January 24, the chair will be taken by Mr. James Whitehead, K.C.

Beit Fellowships for Scientific Research

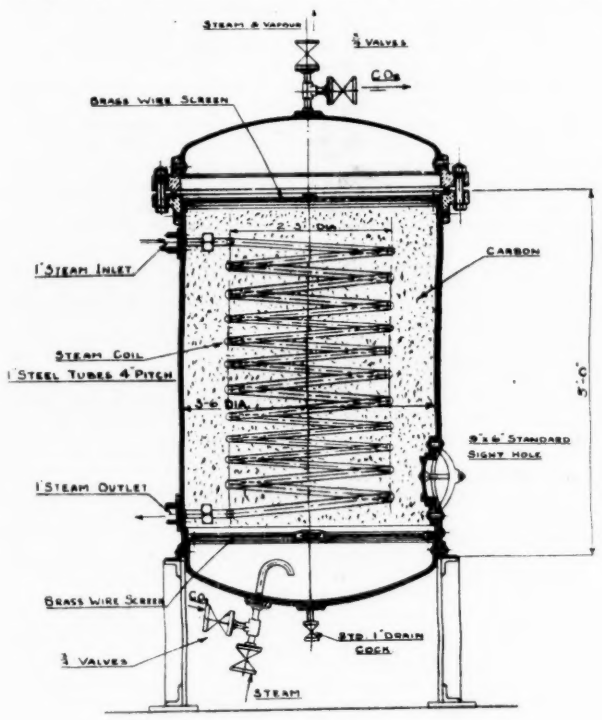
AN election to three Beit Fellowships for scientific research will take place on or about July 16. Candidates must be of European descent and graduates of a university of the British Empire or of equivalent standing. The fellowships are of the annual value of £250 and are tenable at the Imperial College of Science and Technology. Forms of application, and all information may be obtained, by letter only, from the Rector, Imperial College, South Kensington, London, S.W. Applications must be received on or before April 20.

Purification of Carbon Dioxide

An Interesting New Apparatus

In using carbon dioxide gas given off from brewers' vats for general aeration and other purposes, it is well known that one of the practical difficulties is the unpleasant "tang" or taste of the gas, due to the presence of amyl alcohol.

There has now been placed on the market by Sutcliffe, Speakman and Co., Ltd., of Leigh, Lancashire, an interesting apparatus whereby this taste is removed completely in a simple rapid and convenient manner by means of activated



DEODORIZER FOR CARBONIC ACID GAS.
WORKING PRESSURE 250 LBS PER SQ. INCH

carbon. As usual the CO_2 gas is compressed to about 250 lb. pressure, cooled, dried, and then passed through the apparatus, which in the standard form is a small high-pressure steel container having a deep bed of the carbon. The latter at once removes all the taste by absorbing the impurities, leaving an absolutely clean and pure CO_2, which is then further compressed and used as required.

It is hardly necessary to state that activated carbon is a peculiar form of the material in an "active" condition because of the exceedingly fine-grained structure. Ordinary charcoal will, of course, absorb impurities from gases or liquids; for example, it is used in sewer manholes to prevent the escape of any noxious gases, and also for decolorising sugar solutions. More reactive is bone black made by calcining bones, because of the finely-divided condition of the carbon. Far more efficient in absorbing properties is the specially prepared activated carbon in which Sutcliffe, Speakman and Co., Ltd., have specialised for more than ten years past. During the war they made large amounts of activated carbon for gas masks, and their products cover a wide range of uses, including the purification of drinking water, the decolorisation of all kinds of solutions, especially sugar, the purification of gases, and the absorption of vapours such as motor spirit and light oils in the carbonisation industries.

This new practice of using activated carbon to take away the taste of CO_2 from brewers' vats is simple and efficient. The apparatus is shown in the illustration. The arrangement is a steel container, 3 ft. 6 in. diameter and about 6 ft. high over-all, operating under pressure, having a removable top bolted on, and a series of ¾ in. valves as indicated. Inside, there is a layer of activated carbon about 4 ft. 6 in. deep resting on a brass wire screen, with another screen on the top, and inside is a steam coil of 1 in. steel piping, at 4 in. pitch. The impure gas, at about 250 lb. pressure, is passed in at the bottom by the CO_2 valve on the pipe circuit and up through the bed of carbon, all the impurities being absorbed at once and the pure CO_2 taken off at the top. After a certain period, say, about a week, the carbon bed becomes saturated. All that is necessary then is to heat it up by passing steam through the coil, while at the same time steam is passed in direct from underneath, the flow of CO_2 being shut off and the outlet or purging valve opened at the top. This drives off all the impurities, along with water vapour, after which the bed is heated by the coil only to dry the charcoal, and cooled down, being then ready to be used again by adjusting the various valves. The activated carbon may be said to last almost indefinitely.

Chief Labour Officer to the I.C.I.

The following sketch of Mr. R. Lloyd Roberts, Chief Labour Officer to Imperial Chemical Industries, Ltd., is reproduced from the first number of *The Imperial Chemical Industries Magazine*, a bulky publication of 104 pages, with coloured cover. Like most first issues it has a series of special messages—from the directors as a body, from Sir Alfred Mond, Sir Harry McGowan, and Mr. Henry Mond, and one also from the Duke of York. It has also a few special articles, but the great feature of the magazine is its domestic news from all the works. In this it has had the courage to adhere firmly to the idea of a works magazine and to make the doings of the workers its chief interest. It is nicely printed and generously illustrated, and other publications are notified that they are free

to quote or reproduce from its columns. The collection and handling of such a large mass of news items has obviously been rather a task, and the sub-editor will probably in a little while be able to simplify its classification.

Sir Alfred Mond explains in his message the purpose of the magazine. "This magazine," he writes, "is one symbol of the policy which we intend to pursue. It is a means of informing those connected with us in our multifarious enterprises of what all their comrades are doing both in factory life and in their hours of leisure and recreation. It is a means of keeping them in touch with the larger world of employment in their own industry, and in the industrial world generally. It is a means of spreading that feeling of I.C.I. fellowship which it is our ideal to achieve, in which we hope everyone whom the magazine reaches will be prepared, and glad, to co-operate."

From Week to Week

SIR ALEXANDER GIBB has joined the board of Pease and Partners, Darlington.

THE WAREHOUSES of several chemical merchants were invaded by the floods when the Thames overflowed on Friday, January 6.

ON TUESDAY, at the Royal Institution, Professor J. F. Thorpe will begin a course of three lectures on "Unsaturation of Carbon Compounds."

AN OPEN general licence has been issued permitting the export to all destinations of Dynobel, Samsonite, Thames powder, Sabulite No. 1, Super-Sabulite, Barwick, Hertford.

HENRY BERRY AND CO., LTD., hydraulic engineers, Hunslet, Leeds, state that they have been successful in securing an order for 23 sets of pumps of a special design for Imperial Chemical Industries, Ltd.

THE MELBOURNE UNIVERSITY CHEMICAL SOCIETY has placed an enlarged photograph of Professor A. C. D. Rivett in the Cuming Memorial Theatre to commemorate his occupancy of the chair of chemistry and his long association with the society.

A BRITISH SYNDICATE with a capital of $3,000,000, headed by Lord Gainford and Sir George Courthope and allied to the Base Metals Extraction Co., London, is negotiating to acquire the large plant of the British American Nickel Co., at Deschenes, near Ottawa.

A NINETEEN-YEAR-OLD youth, named Frank Joyce, Whetstone Road, Blaby, Leicester, met with his death on January 3, when he was caught in the shafting in the mixing shed at the Chemical Works, Blaby. A foreman stopped the machinery and extricated Joyce from the shafting. The inquest was opened on January 4 and adjourned.

PROFESSOR J. C. PHILIP, F.R.S., gave a lecture on "Charcoal and Its Activation" to the members of the Science Masters' Association on Friday, January 6. During the afternoon the Association were the guests of the Gas Light and Coke Co. and inspected the works, training workshops, physical and chemical laboratories and the new research laboratories.

THE ALSATIAN POTASH MINES in September, 1927, produced 200,500 tons of raw sylvinite, making a total production of 1,725,500 tons for the first nine months of the year, as compared with 1,675,300 tons during the same period for 1926. The actual potash (K_2O) content of the salts mined reached 278,800 tons, an increase of 4 per cent. over the corresponding period for 1926.

A VERDICT OF DEATH by misadventure was recorded at an inquest held recently at Stowupland upon Walter Seaman, aged 49, departmental foreman, who met his death through sulphuretted hydrogen fumes evolved in the mixing of barium sulphide with phosphoric acid in an experimental process at the works of Prentice Brothers, chemical manure manufacturers.

THE JOINT ADVISORY COMMITTEE on River Pollution set up by the Minister of Health and the Minister of Agriculture and Fisheries, of which Sir Horace Monro, K.C.B., is chairman, held its first meeting on Thursday, January 5, at the offices of the Ministry of Health. It was decided to invite certain bodies, administering the Rivers Pollution Prevention Acts, to give evidence at the next meeting of the committee, on February 2.

TO CELEBRATE THE JUBILEE of the Institute of Chemistry, the Birmingham and Midland Sections of the Institute of Chemistry, the Society of Chemical Industry, and the British Association of Chemists, will hold a joint dinner at the Queen's Hotel, Birmingham, on January 21. Sir Edward Threlfall and Sir Charles Grant Robertson are included in the guests who have promised to be present. Tickets, 10s. 6d., may be obtained from Dr. F. W. Norris, 91, Witherford Way, Weoley Hill, Birmingham, or from the hon. secretary of the Society of Chemical Industry, 25, Whitmore Road, Small Heath.

PROFESSOR ALFRED W. NASH, head of the Department of Oil Engineering and Refining at the University of Birmingham, addressed the members of the Birmingham Rotary Club on Monday on the British petroleum industry. In regard to synthetic petroleum, he stated that it could be obtained from coal, but not by either low temperature carbonisation or simple berginisation. Those produced tars which had quite different characteristics from natural petroleum, and although the motor fuel fractions they contained were useful as such, the tars themselves were not suitable substitutes for crude oil.

ARTIFICIAL SILK NEWS.—Following the arbitral decision in its favour in the dispute with the Dreyfus-Clavel group the Fabrique de Soie Artificielle de Tubize has decided to raise its capital from 25,200,000 to 125,000,000 francs.—A new combine is being formed in Glasgow with the object of producing artificial silk and fabrics on a large scale in the Vale of Leven district of Dumbartonshire. The extensive workshops at Alexandria, formerly held by the Argyll Motor Co., and used by the Government as a munition factory during the war, have recently been acquired by the Scottish Textile Trust, Ltd., and are to be used for the new industry.

THE MOND BEQUEST has been housed at the National Gallery, London, and the room was opened on Thursday.

DETAILS OF THE 1928 EXAMINATIONS of the Institute of Chemical Engineers are given in our advertisement columns, p. xxv.

INDIAN INDIGO EXPORTS for the period January to October, 1927, amounted to 1,572 cwt. as against 1,865 in the same period in 1926.

A DISCOVERY OF WHAT IS BELIEVED to be an important supply of cobalt is reported from Arpens, in the neighbourhood of Remiremont and Belfort.

ONE THOUSAND POUNDS has been subscribed by Imperial Chemical Industries, Ltd., to the Lord Mayor of London's fund for the relief of those rendered homeless in the London floods.

ETHYL PETROL, containing a small proportion of lead tetraethyl, ethylene dibromide, halowax oil and a red aniline dye, was put on the market on Tuesday by the Anglo-American Oil Co., under the name of Pratt's Ethyl Petrol.

MEMBERS OF THE AMERICAN CERAMIC SOCIETY will visit Europe this year, and will be in this country from May 19 to July 5. They will first visit Scotland, and then proceed to London, stopping at Stoke-on-Trent, and will afterwards travel on the Continent.

IT IS REPORTED that the I.G. Farbenindustrie is negotiating for the purchase of several United States chemical companies. The I.G. recently established a subsidiary, the Agfa Raw Film Corporation, and it is believed that the new organisation will be merged with this.

BEET SUGAR NEWS.—The Selby Beet Sugar Factory has completed its first manufacturing season. In spite of a light crop, 50,000 tons of beet were supplied. Although it was only expecetd to work 700 tons per 24 hours the average for the season was nearly 800 tons. Three hundred men were employed and about £150,000 will be paid for the beets.

HOBDELL, WAY AND CO., LTD., 45, Church Street, Minories, London, E.1, announce that they have taken over the sole selling rights in this country and colonies of the well-known products, Karnak, Krodeproof and Korkseal, manufactured by the Lewis Asphalt Enginering Corporation of New York, specialists in protection against water and corrosion.

THE MINISTER OF HEALTH has appointed Mr. Herbert George Howson, B.Sc., to be an Inspector under the Alkali, etc., Works Regulation Act, 1906. He has been assigned to the District with Headquarters at Liverpool, Mr. W. A. Damon, B.Sc., F.I.C., who was previously in that District, having been transferred to London, vice Mr. F. N. Sutton, F.I.C., retired.

A NEW TRUST, to be called the Union Chimique Belge, with a capital of 175,000,000 francs, is to be formed, states a *Times* correspondent. The firms included in the fusion are the "Semet Solvay et Piette" blast furnace company, the Société Générale des Produits Chimiques, the "Droogenbosch" chemical products company, and the "Meurice" drug manufacturing company.

LOCAL CELEBRATIONS OF THE INSTITUTE OF CHEMISTRY jubilee have been arranged by the Bristol and S.W. Counties Section of the Institute for January 24. An address on "What has Become of Inorganic Chemistry?" will be given by Professor Arthur Smithells at the Bristol University Chemical Dept., and this will be followed by a dinner at the Royal Hotel, Bristol. Tickets (7s. 6d.), from the hon. secretary, 170, Newbridge Road, Bristol.

"THE VALUE OF RESEARCH TO INDUSTRY" was the subject of an open discussion at a meeting at Dudley on Saturday, January 7, representing the Staffordshire Iron and Steel Institute, Birmingham Metallurgical Society, and Birmingham Section of the Institute of Metals. Mr. D. H. Ingall (County Technical College, Wednesbury) said properly conducted research was absolutely essential to all the metallurgical industries, and those which neglected it, or failed to take advantage of it, would, sooner or later, die a natural death.

REPORTS FROM PARIS state that it is understood that the I.G. Farbenindustrie will shortly invite to a conference the representatives of all who are interested in the nitrogen industry. The object of the conference will be to discuss co-operative action. Rumours are current that conversations have been going on between leading Chilean nitrate producers and Mons. A. Kuhlmann, and that as a result further conversations have been held with Dr. Bosch, of the I.G. The German and Austrian chemical industries have concluded an agreement by which the markets of Austria, Hungary, Yugoslavia, Bulgaria, Roumania, and Turkey are to be reserved for Austria, and those of Germany, Poland, Czechoslovakia, and Western countries for Germany. Similar arrangements for the partition of markets have been concluded between Austrian and Czechoslovakian and Austrian and Hungarian chemical manufacturers.

Obituary

DR. T. T. BEST, F.I.C., chemical manufacturer, of St. Helens, recently.

MR. E. J. CLARK, inventor of the Hart accumulator, and founder of the Hart Accumulator Co., of which he was managing director until his death. He was also chairman of the London Lead-Oxide Co., of Gravesend, which he founded in the early days of the war.

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APPARATUS.—"Greasy" burettes. W. Lowson. *Nature*, January 7, p. 14.

CATALYSIS.—An auto-poisoning phenomenon shown by catalytically active copper at moderate temperatures. F. H. Constable. *J. Chem. Soc.*, December, pp. 2995–3000.

GENERAL.—Extraction of tar from coal gas. *Science Progress*, January, pp. 489–493.

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The structure of surface films, X. Phenols and monoglycerides. N. K. Adam, W. A. Berry, and H. A. Turner. *Roy. Soc. Proc. A.*, January 2, pp. 533–541.

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PROFESSIONAL.—Chemistry as a career. J. R. *Nature*, January 7, pp. 1–4.

United States

APPARATUS.—A new automatic hydrogen sulphide generator. H. H. Barber. *J. Chem. Education*, December, pp. 1546–1549.

Improved apparatus for the removal of dissolved gases from water. J. K. Lorah, K. T. Williams, and T. G. Thompson. *J. Amer. Chem. Soc.*, December, pp. 2991–2994.

CHEMICAL ENGINEERING.—Factors in the design of heat transmission equipment. W. K. Lewis. *Chem. Met. Eng.* December, pp. 735–736.

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GENERAL.—Thermal and photochemical decomposition of caryophyllene nitrosite. P. Valenzuela and F. Daniels. *Philippine J. Science*, October, pp. 187–196.

Protective tubes for thermocouples for determining heat penetration in processed foods. K. L. Ford and A. G. Osborne. *Ind. Eng. Chem.*, December, pp. 1345–1346.

Self-integrating chemical actinometry for ultra-violet dosage or other specific purposes. M. J. Dorcas and G. S. Forbes. *J. Amer. Chem. Soc.*, December, pp. 3081–3086.

OILS.—Esters of alpha linolic acid tetrabromide (methyl, ethyl, propyl, isopropyl and allyl) from lumbang oil. I. Santos and A. P. West. *Philippine J. Science*, October, pp. 199–203.

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The odours and structure of certain cyclic acetals. R. R. Read, H. Lathrop, and H. L. Chandler. *J. Amer. Chem. Soc.*, December, pp. 3116–3119.

The chlorination of β-dichloroethyl sulphide, I and II. W. E. Lawson and T. P. Dawson. *J. Amer. Chem. Soc.*, December, pp. 3119–3125, 3125–3129.

Acyl derivatives of ortho-aminophenol, III. R. E. Nelson, N. W. Shock, and W. H. Sowers. *J. Amer. Chem. Soc.*, December, pp. 3129–3131.

Salicylsulphonphthalein and its tetrabromo and monomercury derivatives. W. C. Harden. *J. Amer. Chem. Soc.*, December, pp. 3139–3142.

PHYSICAL.—A micro method for the determination of surface tension and density. V .R. Damerell. *J. Amer. Chem. Soc.*, December, pp. 2988–2991.

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APPARATUS.—A modified apparatus for the determination of water. A. van der Werth. *Chem. Zeitung*, January 7, pp. 23–24.

GENERAL.—The source of Chile saltpeter. E. Wilke-Dörfurt. *Z. anorganische und allgemeine Chem.*, December 16, pp. 203–208.

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The production of ammonium chloride from ammonium sulphate and sodium chloride. E. Hochberger. *Chem. Zeitung*, January, pp. 22–23.

Bismuth and the preparation of bismuth preparations. J. Ott. *Die Metallbörse*, January 4, pp. 5–6.

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Aluminium and cement. J. Meyer. *Chem. Zeitung*, January 4, pp. 4–5.

The technical production of sodium fluoride. A. E. J. Müller. *Chem.-Zeitung*, January 4, pp. 5–6.

The production and composition of decolorising carbons. I. P. Hönig. *Chem.-Zeitung*, January 4, pp. 7–8.

ORGANIC.—Preparation of *iso*butyryl chloride. A. Récsei. *Chem. Zeitung*, January 7, p. 22.

Miscellaneous

CATALYSIS.—The catalysis of nickel on the thermal decomposition of methane. B. Yamaguti. *Bull. Chem. Soc. Japan*, November, pp. 289–294 (in English).

GAS.—The compression of town gas. J. Chappuis and A. Pignot. *Comptes Rendus*, December 19, pp. 1486–1488 (in French).

ORGANIC.—The replaceability of the halogen atom in 1-chloro-2 : 4-dinitro-5-ethoxy (methoxy)-benzene by alkoxy groups. H. F. J. Lorang. *Recueil Travaux Chimiques Pays-Bas*, December 15, pp. 891–902 (in English).

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The catalytic hydrogenation under pressure of para-hydroxytriphenylcarbinol and of para hydroxydiphenylmethane. W. Ipatriw and B. Dolgof. *Comptes Rendus*, December 19, pp. 1484–1486 (in French).

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VULCANISATION.—Studies on the ageing of vulcanised rubber. IV. Relation between wavelengths in sunlight and the deterioration of vulcanised rubber. T. Yamazaki. *J. Soc. Chem. Ind. Japan* (supplemental binding), November, pp. 209–211B (in English).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

281,474. Treatment of Coal Gas and the Like, and Production of Ammonium Sulphate. C. Cooper, F. B. Holmes and W. C. Holmes and Co., Ltd., Whitestone Iron Works, Huddersfield, Yorks. Application date, November 30, 1926.

The object is to obtain ammonium sulphate from distillation gases employing calcium sulphate as the source of the sulphuric radicle. The gases are cooled to obtain an aqueous condensate containing ammonia and carbon dioxide, and the cooled gases are subjected to the action of the condensate and calcium sulphate. The condensate may be treated to expel part of the water and all the ammonia and carbon dioxide, and the vapours are condensed to obtain a liquor having an increased content of ammonia and carbon dioxide. Alternatively, the gas may be first cooled to separate some water and ammonia and the condensate is cooled and used for washing the cooled gas, and the resulting liquid is employed with calcium sulphate for further treatment of the gas. The ammonia liquor may be treated to reduce its content of pyridine, tar acids, cyanogen compounds, etc. In another alternative process, coal gas is cooled and the separated liquor divided into two streams, one of which is treated to expel ammonia and other constituents which are returned to the gas stream, while the remaining liquor is cooled and used for washing the cooled gases. The resulting liquid, together with calcium sulphate, is used in the treatment of the cooled and washed gas which has been enriched with ammonia, etc.

281,491. Anhydrous Chlorides and Hydrogen Chloride, Production of. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, January 7, 1927.

It is known that aluminium chloride can be obtained by treating aluminium silicates containing metallic oxides with carbon monoxide and chlorine, but difficulties are experienced in maintaining the necessary temperature and pure carbon monoxide is necessary. In this invention, a gas mixture such as water gas may be used if treated with chlorine in quantity equivalent to the carbon monoxide and hydrogen, and the resulting mixture with its substantial rise in temperature brought immediately into contact with the substances containing the metallic oxides. The raw material such as kaolin, is treated in counter-current in a shaft furnace or rotary tube furnace with the gaseous mixture, and the silica residue removed at intervals. If chrome iron ore is treated, the non-volatile chromium chloride is removed with the residues. In the production of aluminium chloride or ferric chloride, the chloride vaporises with the gases and is condensed out. The hydrogen chloride gas may be washed with concentrated hydrochloric acid to remove traces of metallic chloride, and pure hydrogen chloride is thus obtained. An example of the treatment of kaolin is given.

281,530. Material Containing Thymol and Polymerised Formaldehyde, Process for Production of. A. Abraham, 19, Katharinen Strasse, Berlin-Halensee, Germany. Application date, April 19, 1927.

Solid formaldehyde in various forms such as trioxy-methylene or paraformaldehyde is dissolved in melted thymol and cooled to obtain a crystalline product which can be used for disinfecting purposes. Filling materials such as kieselguhr may be added.

281,510. Sulphuric Acid, Manufacture of. A. Sharp, London, W.C.1. From Soc. Générale Métallurgique de Hoboken, Hoboken-les-Anvers, Belgium. Application date, February 19, 1927.

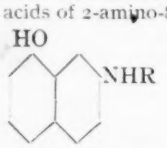
In the manufacture of sulphuric acid in reaction towers, it is found that the production costs decrease as the cross section of the tower is increased, a cross section of 50 square metres being a critical value above which the rate of decrease of cost is much greater. In this invention, a cross section of 100-300 square metres is used with a height not greater than the greatest diameter. The packing consists of irregular pieces of about 40 mm. diameter. The use of large towers is more advantageous when gas poor in sulphur dioxide is treated. Reference is directed in pursuance of Section 7, Sub-section 4, of the Patents and Designs Acts of 1907 and 1919, to Specification No. 249,914.

281,551. Sulphuric Acid, Manufacture of. H. Petersen, 6, Hohenzollernstrasse, Steglitz, Berlin. Application date, June 7, 1927.

The oxidation of the sulphurous gases is effected by a solution of nitrous sulphuric acid in sulphuric acid, and the cold sulphurous acid gases used for the denitration are those from the roasting ovens after cooling by employing them to concentrate sulphuric acid. In this invention, the acid produced in towers filled with small grains of quartzite is denitrated by means of cold sulphurous gases (*e.g.*, at 0° C.) in one of the towers. The heat of the gases from the roasting ovens may thus be employed to a much greater extent for concentration or other purposes.

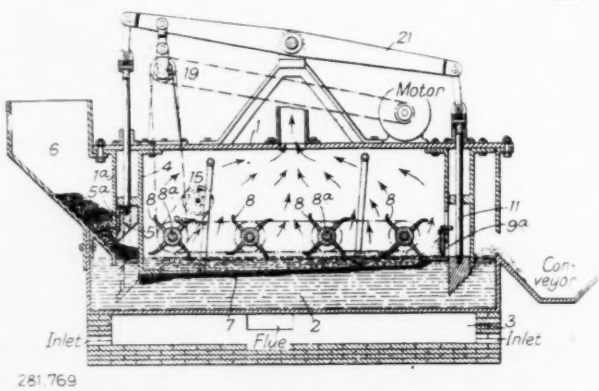
281,767. Secondary Disazo Dyes. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, J. Baddiley, P. Chorley, and R. Brightman, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, September 8, 1926.

These dyes, which usually have the property of dyeing regenerated cellulose silks, such as viscose silk in level shades, are obtained by coupling diazotized aminoazo compounds, their homologues, derivatives, and the sulphonic or carboxylic acids, with sulphonic acids of 2-amino-8-naphthols of the type



where R represents a monocyclic aryl group or a carboxylic acyl group but contains no amino substituent. As aminoazo compounds, aminoazo benzene sulphonic acid or the compound obtained by coupling 2-naphthylamine-4.8-disulphonic acid with 1-naphthylamine may be used. Examples are given employing 2-meta-xylylamino-8-naphthol-6-sulphonic acid and diazotized aminoazo dyestuff from aniline and a mixture of α-naphthalamine-6- and 7-sulphonic acids; and several other components.

281,769. Distilling Crude Oil from Shale. C. A. Spotz, Main Street, Stamford, Conn., U.S.A. Application date, September 9, 1926.



281,769

The apparatus is for distilling shale at a relatively low temperature and for a shorter period than usual. A retort 1 contains a bath of molten metal 2 heated by a flue 3, and shale is fed in large lumps from a hopper 6. A reciprocating

pusher 5 having an inclined lower face, operates between walls 1*a*, 4, and feeds the shale below an agitating and conveying member 7. The pusher 5 carries a gate 5*a* which closes the outlet of the hopper when the pusher is in its lower positions. It is found that if large lumps of shale are kept agitated below a perforated screen in a bath of molten metal, the surface of the lumps is removed as the volatile matter distils off, leaving a fresh surface to be acted upon. In this way, a temperature of 800° F. may be employed. The perforated metal plate 7 is inclined upwards towards the delivery end, and the detached particles pass upwards through it to the surface. A number of shafts 8*a* carrying blades 8 are driven by chain drive from a shaft 19, and the floating particles are thus conveyed to the outlet 9*a*. A discharge pusher 11 similar to 5 is provided, and both are reciprocated by an oscillating beam 21 driven from the shaft 19. Any unreduced lumps of shale are received from the screen 7 and discharged by the pusher 11. The screen 7 is suspended by arms 7*a*, 7*b*, which are oscillated by a cam 15 driven from one of the shafts 8*a*.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—261,362 (L. C. Karrick) relating to distillation of carbonaceous material, see Vol. XVI, p. 91 ; 262,738 (Deutsche Bergin Akt.-Ges für Kohle und Erdölchemie) relating to liquefaction of coal by hydrogenation, see Vol. XVI, p. 189 ; 267,138 (Soc. Internationale des Procédés Prudhomme Houdry) relating to desulphurisation of gases from distillation of coal, etc., see Vol. XVI, p. 468 ; 270,661 (M. Colombo Y Manni) relating to sulphuric acid chambers, Vol. XVII, p. 63.

International Specifications not yet Accepted

279,870. ALUMINA. Metallbank und Metallurgische Ges., Akt.-Ges., 45, Bockenheimer Anlage, Frankfort-on-Main, Germany. (Assignees of G. Schoenberg, 17, Benkenstrasse, Basle, Switzerland). International Convention date, October 26, 1926.

Aluminiferous material is treated with mineral acids to remove silicic and titanic acids, and the remaining mixture of iron and aluminium salts converted to the oxides. These are fused with reducing agents such as carbon in the presence of less than 3 per cent. of sulphides, which may be sulphur-containing combustion gases. Alumina is obtained.

279,877. CLEANSING COMPOSITIONS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 27, 1926.

An alkali or ammonium salt of an alkylated or cyclo-alkylated aromatic hydrocarbon is dissolved in an organic solvent with or without a water-binding agent to obtain stable solid solutions. The products are used as cleansing, wetting, or bleaching agents. Examples are given of products obtained from sodium butylnaphthalene sulphonate and dipentene ; sodium isopropyl-naphthalene sulphonate, dipentene and ammonium sulphate ; sodium butylnaphthalene sulphonate and 1 : 3-butylene-glycol ; sodium butylnaphthalene sulphonate, oil of turpentine, and calcined sodium carbonate ; sodium or ammonium dibutylnaphthalene sulphonate, pumice powder or kaolin, and turpentine oil.

279,884. ALKYLGUANIDINES. Chemische Fabrik auf Actien, vorm. E. Schering, 170, Mullerstrasse, Berlin. International Convention date, October 28, 1926.

Isoamyl-, hexyl-, heptyl-, and phenylethyl-guanidines are obtained by heating a salt of the corresponding alkylamine with cyanamide in aqueous or alcoholic solution. Pentamethylene-, hexamethylene-, and decamethylene-diguanidines are obtained from the corresponding diamines and cyanamide. N-methyl-N'-hexylguanidine is obtained by heating hexylamine with methylcyanamide. Propyl-, amyl-, isoamyl-, and hexyl-guanidines are obtained from a salt of the corresponding amine and a caustic soda solution of cyanamide.

280,165. PURIFYING GASES. Koppers Co., 800, Union Trust Building, Pittsburg, U.S.A. (Assignees of D. L. Jacobson and H. A. Gollmar, 800, Union Trust Building, Pittsburg, U.S.A.) International Convention date, November 5, 1926.

Fuel gases are freed from hydrogen sulphide and hydrogen cyanide by washing in an alkaline liquid containing a metal compound, the liquid being then regenerated by air or oxygen. The wash liquid consists of a compound of arsenic, antimony, tin, molybdenum, vanadium, tungsten, germanium, uranium, iridium, bismuth, mercury, rhodium, indium, gold or platinum, whose sulphides are soluble in alkaline sulphido solution. In an example, the solution is obtained by passing hydrogen sulphide through sodium arsenite solution, and aerating the solution. The thio-arsenic compound obtained can then be used repeatedly for absorbing hydrogen sulphide followed by regeneration by oxidation. The amount of arsenic may vary from 0.1 per cent. to 0.8 per cent., As_2O_3, and the temperature during regeneration may be 30° C.

280,169. LEAD TETRA-ETHYL. W. S. Calcott, Riverside Apartments, Pennsgrove, N. J., U.S.A., A. E. Parmelee, 155, Delaware Avenue, Carney's Point, N.J., U.S.A., and F. R. Lorriman, 11, Church Street, Pennsgrove, N.J., U.S.A. International Convention date, November 3, 1926.

Ethyl chloride is heated for some hours at 30°–45° C. in a closed vessel with lead containing 9.4–9.5 per cent. of sodium and 0.75 per cent. of potassium to obtain lead tetra-ethyl.

280,184. ACETONE. Holzverkohlungs-Industrie Akt.-Ges., Constance, Baden, Germany. International Convention date, November 4, 1926.

Acetone is obtained by the reaction of acetylene and steam at a high temperature in the presenece of iron oxide, the activity of which is increased by the addition of a promoter such as metals and their oxygen-containing compounds, *e.g.*, iron, manganese oxide, aluminium oxide, barium carbonate, zinc carbonate, lime, or magnesia. The catalyst and promoter may be on a metallic carrier. The composition of the contact mass is adjusted so that the partial pressure of oxygen in the reaction mixture is betweeen 10^{-30} and 10^{-32} atmospheres at a reaction temperature of 400° C., and between 10^{-25} and 10^{-27} atmospheres at a temperature of 500° C. The proportions of acetylene to steam should be 1 : 5–10, and the reaction is begun at a low temperature which is gradually raised. Several examples are given, employing iron, manganese, oxide, and barium carbonate as promoters.

280,217. DYES. L. Cassella and Co., Ges., Frankfort-on-Maine, Germany. International Convention date, November 2, 1926. Addition to 260,998. (See THE CHEMICAL AGE, Vol. XVI, p. 69).

1 : 1'-dinaphthyl-8 : 8'-dicarboxylic acid (see Specification 278,100, THE CHEMICAL AGE, Vol. XVII, p. 418) is condensed to anthanthrone by dissolving in sulphuric acid monohydrate below 60° C., and the product is halogenated in the same solution without separation.

280,226. FERTILIZERS. Soc. Anon. Union Agricole de Jodoigne, Jodoigne, Brabant, Belgium. International Convention date, November 4, 1926.

Natural phosphates containing a high percentage of phosphoric acid and calcium carbonate are mixed with potassium chloride and treated with sulphuric acid. Ammonium sulphate is added, and the product neutralized by adding a natural phosphate containing a low percentage of calcium carbonate. The product is dried and ground.

280,238. CONDENSATION PRODUCTS OF ALCOHOLS AND KETONES WITH UREA. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, November 6, 1926. Addition to 278,390 (see THE CHEMICAL AGE, Vol. XVII, p. 515).

Urea or a derivative is condensed with an alcohol or ketone or derivative at a temperature below 120° C. in the presence of a catalyst such as a strong acid. Oily products are first obtained, and may be treated with a catalyst to obtain more highly polymerized products. Examples are given of the treatment of urea with butylene glycol and concentrated sulphuric acid ; urea with the acetal from glycerin and acetaldehyde in the presence of hydrochloric acid gas ; and urea with diacetin and concentrated sulphuric acid.

280,240. CALCIUM MOLYBDATE. A. Kissock, Forest Hills, New York. International Convention date, November 6, 1926.

Molybdenum sulphide is roasted on the upper hearths of a multiple hearth ore roasting furnace of the gravity type to obtain the trioxide free from sulphur, and the trioxide is mixed with calcium hydrate and heated on the lower hearths to 1,400° F. to produce calcium molybdate.

LATEST NOTIFICATIONS.

282,704. Method of treating raw phosphate and other materials containing insoluble calcium phosphate. Liljenroth, F. G. December 31, 1926.
282,706. Treatment of zinc sulphate. Soc. Générale Métallurgique de Hoboken. December 30, 1926.
282,710. Process for the employment of highly sulphonated Turkey-red oils in tanning. Flesch, H. December 27, 1926.
283,105. Manufacture and production of hydrocarbons poor in hydrogen. I.G. Farbenindustrie Akt.-Ges. January 3, 1927.
282,755. Manufacture of sulphate of ammonia and cement. Soc. Anon. de Material de Construction. December 29, 1926.
282,782. Manufacture of new dyestuffs and the application thereof. Soc. of Chemical Industry in Basle. December 24, 1926.
282,783. Manufacture of new dyestuffs containing chromium, and the application thereof. Soc. of Chemical Industry in Basle. December 24, 1926.
282,793. Process of producing cellulose esters. Ruth-Aldo Co. Inc. December 28, 1926.
282,803. Manufacture of alkylisorosinduline-sulphonic acids. Geigy Akt.-Ges., J. R. December 27, 1926.
282,804. Manufacture of black copying-colours. I.G. Farbenindustrie Akt.-Ges. December 27, 1926.
282,805. Manufacture of indigoid vat dyestuffs. I.G. Farbenindustrie Akt.-Ges. December 24, 1926.
282,814. Manufacture and production of valuable liquid and other hydrocarbons and derivatives thereof by the destructive hydrogenation of tars, mineral oils, resins, asphalts, and like initial materials. I.G. Farbenindustrie Akt.-Ges. August 14, 1925.
283,112. Process for the manufacture of acetal. Soc. Anon. des Distilleries des Deux Sèvrés. January 3, 1927.
283,118. Manufacture of indigoid vat dyestuffs. I.G. Farbenindustrie Akt.-Ges. January 3, 1927.
283,119. Manufacture of methylene chloride. I.G. Farbenindustrie Akt.-Ges. January 3, 1927.
283,124. Process for the production of oil-soluble phenolaldehyde condensation products. Bakelite Ges. January 3, 1927.

Specifications Accepted with Date of Application

258,894. New azo dyestuffs, Manufacture of. I. G. Farbenindustrie Akt.-Ges. September 25, 1925.
266,387. Producing combined shades from sulphur dyes and ice colours on vegetable fibre. I. G. Farbenindustrie Akt.-Ges. February 22, 1926.
271,103. Butyric aldehyde, Manufacture of. Consortium für Elektro-chemische Industrie Ges. May 15, 1926.
275,578. Dissolving titaniferous materials in acids, Process for. Titan Co. Aktieselskabet. August 3, 1926.
282,463. Fertilizers. Synthetic Ammonia and Nitrates, Ltd., and A. E. Mitchell. June 19, 1926.
282,480. Drying waste sulphite liquors to obtain dry granular solids. H. G. C. Fairweather. (*Induatrial Waste Product Corporation.*) September 6, 1926.
282,481. Vat dyes. British Dyestuffs Corporation, Ltd., W. D. Rogerts, H. Evans and W. F. A. Ermen. September 13, 1926.
282,508. Oxidation of hydrogen sulphide contained in industrial gas to sulphur, Process for. K. Carpmael and K. S. Carpmael. (*I. G. Farbenindustrie Akt.-Ges.*). September 27, 1926.
282,525. Distillation of tar and other viscous substances. J. F. Carmichael and J. F. Carmichael and Co., Ltd. October 28, 1926.
282,541. Obtaining volatile hydrocarbons such as gasoline, benzene, or other hydrocarbon oils contained in natural gas, coal gas, water gas, air, or other gaseous mixtures. M. Okochi. November 12, 1926.
282,543. Extracting platinum from ores or the like, Process for. J. W. Mellor. November 18, 1926.
282,548. Azo dyestuffs and their application. British Dyestuffs Corporation, Ltd. and H. W. Moss. December 7, 1926.
282,559. Carrying out exothermic chemical reactions, Process for. E. C. R. Marks. (*Selden Co.*) January 10, 1927.
282,573. Water gas and hydrogen, Production of. Synthetic Ammonia and Nitrates, Ltd., and H. A. Humphrey. February 22, 1927.
282,617. Compositions containing caoutchouc. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*). June 10, 1926.

Applications for Patents

Baddiley, J., British Dyestuffs Corporation, Ltd., and Chapman, E. Detergent compositions. 527, 528. January 6. (September 21, 1926.)
Bakelite Ges. Production of phenolaldehyde condensation products. 228. January 3. (Germany, January 3, 1927.)
Buchner, M. Process of producing alumina. 174. January 3. (Germany, January 3, 1927.)
Capps, A. W. F. Extraction of sugar from sugar beet. 335. January 5.
Capps, A. W. F. Method of drying solids. 336. January 5.
Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of monohalogenated naphthostyril compounds. 169. January 3.
Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of urethanes. 170. January 3.
I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs 34,491. December 20. (Germany, December 22, 1926.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of mono-azo-dyestuffs. 34,492. December 20. (Germany, December 23, 1926.)
I.G. Farbenindustrie Akt.-Ges. Recovery of organic products from solid carbonaceous materials. 34,619. December 21. (Germany, December 22, 1926.)
I.G. Farbenindustrie Akt.-Ges. Recovery of organic products. 34,620. December 21. (Germany, January 13.)
I.G. Farbenindustrie Akt.-Ges. Recovery of organic products. 34,621. December 21.
I.G. Farbenindustrie Akt.-Ges. Manufacture of acid, etc., resisting derivatives of unsaturated fatty acids. 34,946. December 23. (Germany, April 1.)
I.G. Farbenindustrie Akt.-Ges. Production of 2-hydroxycarboxylic acids. 35,123. December 28.
I.G. Farbenindustrie Akt.-Ges. Production of coloured compositions, etc. 35,125. December 28.
I.G. Farbenindustrie Akt.-Ges. Separation of oils from mixtures with solid substances. 35,218. December 29.
I.G. Farbenindustrie Akt.-Ges. Low-temperature carbonization of bituminous materials. 35,219. December 29.
I.G. Farbenindustrie Akt.-Ges. Synthetic production of methanol. 35,338. December 30.
I.G. Farbenindustrie Akt.-Ges. Method of operating with gases at elevated temperatures. 35,339. December 30.
I.G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 35,364. December 30.
I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of azo dyestuffs. 35,460, 35,461. December 31.
I.G. Farbenindustrie Akt.-Ges. Process for manufacture of oxygenated compounds. 35,464. December 31.
I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphur dyestuff pastes. 35,465. December 31.
I.G. Farbenindustrie Akt.-Ges. Manufacture of condensation products of benzo-diazine series. 35,466. December 31.
I.G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 35,151. December 28. (Germany, December 24, 1926.)
I.G. Farbenindustrie Akt.-Ges. Production of hydrocarbons, etc. 35,217. December 29. (Germany, August 14, 1925.)
I.G. Farbenindustrie Akt.-Ges. Manufacture of *N*-oxyethyl derivatives of 4-amino-1-oxybenzene. 35,224. December 29. (Germany, May 23.)
Imperial Chemical Industries, Ltd. Manufacture of esters. 34,662. December 21.
Imperial Chemical Industries, Ltd. Electrodes for arc welding. 35,335. December 30.
Imperial Chemical Industries, Ltd. Separating gases, etc. 35,419, 35,420. December 31.
International Sugar and Alcohol Co., Ltd., and Soc. Industrielle de la Cellulose. Recuperation of hydrochloric acid gas. 34,632. December 21.
International Sugar and Alcohol Co., Ltd., and Soc. Industrielle de la Cellulose. Recovery of hydrochloric acid. 34,633. December 21.
Laing, B., and Nielsen, H. Distillation of carbonaceous materials. 34,825. December 23.
Lockwood, A. A. Process for removal of sulphur from oil. 35,321. December 30.
Miescher, K., and Soc. of Chemical Industry in Basle. Manufacture of derivatives of substituted quinoline carboxylic acids. 34,777. December 22.
Nielsen, H. Reduction of calcium carbonate, etc. 35,324. December 30.
Oranienburger Chemische Fabrik Akt.-Ges. Production of stable sulpho-acids, etc. 34,523. December 20. (Germany, April 1.)
Parkes, D. W. Treatment of ammonia liquors, etc. 34,933. December 23.
Patart, G. Reduction of calcium carbonate, etc. 35,324. December 30.
Plauson, H., and Potts, H. E. Accelerating chemical reactions. 35,285. December 30.
Plauson, H., and Potts, H. E. Synthesising nitrogen compounds. 35,286. December 30.
Plauson, H., and Potts, H. E. Synthesis of liquid hydrocarbons. 35,287. December 30.
Riedel Akt.-Ges., J. D. Preparation of aromatic oxyaldehydes. 34,470. December 20. (Germany, February 17.)
Soc. Anon. de Matérial de Construction. Manufacture of sulphate of ammonia, etc. 34,688. December 22. (France, December 29, 1926.)
Schering-Kahlbaum Akt.-Ges. Manufacture of 2-aminopyridines, etc. 35,363. December 30. (Germany, January 14.)
Schering-Kahlbaum Akt.-Ges. Manufacture of 4-alkyl-quinolines, etc. 35,365. December 30. (Germany, January 14.)
Scottish Dyes, Ltd., and Todd, W. H., Wilson, J. S., and Thomas, J. Preparation of dyestuffs, etc. 35,371. December 30.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages extra.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 2d. to 2s. 7d. per gall.; pyridinised industrial, 2s. 4d. to 2s. 9d. per gall.; mineralised, 3s. 3d. to 3s. 7d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity as from January 1, 1928.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7¼d. to 7¾d. per lb. Crude 60's, 2s. 5d. per gall. prompt; lower for forward delivery.

ACID CRESYLIC 99/100.—2s. 11d. to 3s. per gall. 97/99.— 2s. 4d. to 2s. 5½d. per gall. Pale, 95%, 2s. 3d. to 2s. 4d. per gall. Dark, 95%, 2s. 1d. to 2s. 2d.

ANTHRACENE.—A quality, 2½d. per unit. 40%, £5 per ton.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7¾d. to 8d. per gall.

BENZOLE.—Crude 65's, 9¼d. to 9¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 1¼d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 1s. 11d. per gall.

XYLOL.—1s. 3d. to 1s. 8d. per gall. Pure, 1s. 9d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8¾d. to 9d. per gall. Standard specification, 7¾d. to 7¼d. ex works. Salty, 7d. per gall., less 1¼%.

NAPHTHA.—Crude, 9d. to 10d. per gall. Solvent 90/160, 9¾d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9¾d. to 1s. 2d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £13 to £13 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.

PITCH.—Medium soft, 85s. to 90s. per ton, f.o.b., according to district. Market firm.

PYRIDINE.—90/140, 5s. 6d. to 6s. 6d. per gall. 90/180, 3s. 6d. to 5s. per gall. Heavy, 3s. to 3s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 8¾d. per lb.

ACID GAMMA.—4s. 6d. per lb.

ACID H.—3s. per lb.

ACID NAPHTHIONIC.—1s. 6d. per lb.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb.

ACID SULPHANILIC.—8½d. per lb.

ANILINE OIL.—8d. per lb. naked at works.

ANILINE SALTS.—8d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8¾d. per lb.

o-CRESOL 29/31° C.—5½d. per lb.

m-CRESOL 98/100%.—2s. 3d. to 2s. 5d. per lb.

p-CRESOL 32/34° C.—2s. 3d. to 2s. 5d. per lb.

DICHLORANILINE.—1s. 10d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb.

DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—10d. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb.

B-NAPHTHYLAMINE.—3s. per lb.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb.

R. SALT.—2s. 2d. per lb.

SODIUM NAPHTHIONATE.—1s. 8¼d. per lb. 100% basis d/d.

o-TOLUIDINE.—8½d. per lb.

p-TOLUIDINE.—2s. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.

N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.

CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.

IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.

WOOD TAR.—£4 to £5 per ton.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3d. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPHONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 7d. per lb.

ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.
ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 6½d. to 1s. 7d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P. PULV.—1s. 2½d. to 1s. 4d. per lb.; Technical.—11½d. to 11¾d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 3¼d. per lb., less 5%.
ACETANILIDE.—1s. 6d. to 1s. 9d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—8s. to 8s. 3d. per lb.
AMMONIUM BENZOATE.—3s. to 3s. 3d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
ATROPINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—10s. 4d. to 10s. 7d. per lb.
BISMUTH CITRATE.—9s. 10d. to 10s. 1d. per lb.
BISMUTH SALICYLATE.—8s. 10d. to 10s. 1d. per lb.
BISMUTH SUBNITRATE.—8s. 4d. to 8s. 7d. per lb.
BISMUTH NITRATE.—6s. 1d. to 6s. 4d. per lb.
BISMUTH OXIDE.—13s. 10d. to 14s. 1d. per lb.
BISMUTH SUBCHLORIDE.—13s. 10d. to 14s. 1d. per lb.
BISMUTH SUBGALLATE.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi et Ammon, Cit. B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts., 11½d. per lb.
BORAX B.P.—Crystal, 25s. per cwt.; powder, 26s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Ammonium, 1s. 11d. to 2s. 1d. per lb.; potassium, 1s. 7¾d. to 1s. 9¾d. per lb.; sodium, 1s. 10d. to 2s. per lb.; granulated, ¼d. per lb. less; all spot. Large quantities at lower rates.
CALCIUM LACTATE.—1s. 2d. to 1s. 4d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.
HYDROQUINONE.—3s. 10d. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb.; U.S.P., 2s. 2d. to 2s. 5d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 16s. 6d. per lb. net for January delivery; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10s. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 5d. to 1s. 9d. per lb.
METHYL SULPHONAL.—9s. to 9s. 3d. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb.
PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
PHENAZONE.—4s. to 4s. 3d. per lb.
PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—96s. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 1911, 1s. 8d. to 1s. 11d. per lb.; U.S.P., 1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—55s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—2s. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 9d. per lb. Crystal, 1s. 8d. to 1s. 10d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—6s. 9d. to 7s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.
THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—11s. per lb.
AMYL ACETATE.—2s. per lb.
AMYL BUTYRATE.—4s. 9d. per lb.
AMYL SALICYLATE.—2s. 9d. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.
COUMARIN.—10s. per lb.
CITRONELLOL.—13s. 6d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. per lb.
ETHYL PETHALATE.—3s. per lb.
EUGENOL.—8s. 3d. per lb.
GERANIOL (PALMAROSA).—17s. 9d. per lb.
GERANIOL.—6s. to 10s. per lb.
HELIOTROPINE.—4s. 6d. per lb.
ISO EUGENOL.—13s. per lb.
LINALOOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.
LINALYL ACETATE.—Ex Bois de Rose. 18s. 6d. per lb. Ex Shui Oil, 14s. 6d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb.
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—8s. per lb.
NEROLIN.—4s. 6d. per lb.
PHENYL ETHYL ACETATE.—11s. 6d. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—32s. 6d. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 8d. per lb.
VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.
ANISE OIL.—2s. 9d. per lb.
BERGAMOT OIL.—25s. per lb.
BOURBON GERANIUM OIL.—14s. per lb.
CAMPHOR OIL.—9d. per lb.
CANANGA OIL, JAVA.—14s. 6d. per lb.
CINNAMON OIL LEAF.—6s. 9d. per lb.
CASSIA OIL, 80/85%.—6s. 9d. per lb.
CITRONELLA OIL.—Java, 2s. per lb., c.i.f. U.K. port for shipment over 1928. Ceylon, pure, 1s. 9d. per lb.
CLOVE OIL.—5s. 6d. per lb.
EUCALYPTUS OIL, AUSTRALIAN.—2s. 1d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 17s. per lb.
LEMON OIL.—9s. per lb.
LEMONGRASS OIL.—4s. 3d. per lb.
ORANGE OIL, SWEET.—12s. 6d. per lb.
OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 65s. per oz.
PALMA ROSA OIL.—10s. 3d. per lb. nominal.
PEPPERMINT OIL.—Wayne County, 16s. per lb.; Japanese, 7s. 3d. per lb.
PETITGRAIN OIL.—7s. 6d. per lb.
SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, January 12, 1928.

TRADE has improved generally, and there has been a much better inquiry for various articles. Markets remain firm and the upward tendency continues. Export trade continues fair.

General Chemicals

ACETONE is firm at £64 to £66 per ton, according to quantity.
ACID ACETIC still continues very firm, price unchanged at £37 to £38 per ton for 80% grades.
ACID CITRIC.—Unchanged.
ACID FORMIC.—Demand continues good at £45 per ton.
ACID LACTIC.—Unchanged.
OXALIC ACID remains firm and in good demand at £30 per ton.
ALUMINA SULPHATE.—Demand is good and supplies are short. Price continues very firm at £5 15s. to £5 17s. 6d. per ton.
AMMONIUM CHLORIDE.—Unchanged.
BARIUM CHLORIDE.—Unchanged at £8 to £9 per ton, according to quantity.
COPPER SULPHATE.—Unchanged.
FORMALDEHYDE is in fair demand, but price remains unchanged at £41 to £43 per ton.
LEAD ACETATE.—Unchanged at £43 per ton for white with 10s. per ton less for brown.
LIME ACETATE.—Unchanged.
METHYL ACETONE.—Market continues active and supplies short, at £54 to £55 per ton.
POTASSIUM CHLORATE.—Unchanged.
POTASSIUM PERMANGANATE is a little more active at 5d. per lb.
POTASSIUM PRUSSIATE.—Unchanged at £59 per ton.
SODA ACETATE is in very short supply at £20 per ton, and demand continues good.
SODA BICHROMATE.—Unchanged.
SODA CHLORATE is still in short supply, and price is firm at about £28 per ton.
SODA NITRITE is firm at £19 10s. to £20 per ton. Demand increasing.
SODA PRUSSIATE is still in good demand at 4½d. per lb.
SODA SULPHIDE is firm and price is unchanged.
ZINC SULPHATE.—Unchanged.

Coal Tar Products

The market for coal tar products remains quiet, with little change to report in the values.
90's BENZOL is quoted at about 1s. 3d. to 1s. 4d. per gallon, while the motor quality is quoted at 1s. 1d. to 1s. 2d. per gallon.
PURE BENZOL is worth about 1s. 5½d. to 1s. 6½d. per gallon, on rails.
CREOSOTE OIL is firm at about 7½d. per gallon, on rails, in the North, while the price in London is about 8½d. per gallon.
CRESYLIC ACID is again improving, the price of the pale quality, 97/99%, being about 2s. 5d. per gallon at works, while the dark, 95/97%, is quoted at about 2s. per gallon.
SOLVENT NAPHTHA is weaker, and can be bought at 8½d. per gallon, on rails.
HEAVY NAPHTHA remains unchanged, at about 10d. per gallon.
NAPHTHALENES, although in no great demand, are very firm, at about £6 15s. to £7 per ton for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.
PITCH is a little weaker, but chiefly owing to lack of business, the price remains normal at 80s. to 85s., f.o.b.

Latest Oil Prices

LONDON, JANUARY 11.—LINSEED OIL flat at 5s. to 7s. 6d. per ton decline. Spot, ex mill, £28 10s.; January, £27 5s.; January-April, £27 15s.; May-August, £28 17s. 6d.; September-December, £29 7s. 6d. RAPE OIL quiet. Crude extracted, £44; technical refined, £46, naked, ex wharf. COTTON OIL quiet. Refined common edible, £42; Egyptian crude, £37 10s.; and deodorised, £44 per ton. TURPENTINE steady at 3d. advance. American, spot, 42s. 3d.; February-April, 43s. 3d. per cwt.

HULL, January 11.—LINSEED OIL.—Spot and January, £28 7s. 6d.; February-April, £28 10s.; May-August, £28 17s. 6d.; September-December, £29 7s. 6d. per ton, naked. COTTON OIL.—Bombay crude, £31 5s.; Egyptian, crude (new), £35 15s.; edible refined, £39 5s.; technical, £35 5s.; deodorised, £41 5s. per ton, naked. PALM KERNEL OIL.—Crushed 5½ per cent., £39 10s. per ton, naked. GROUNDNUT OIL.—Crushed/extracted, £45 10s.; deodorised, £49 10s. per ton. SOYA OIL.—Extracted and crushed, £33 10s.; deodorised, £37 per ton. RAPE OIL.—Crude-extracted, £42 10s.; refined, £44 10s. per ton. TURPENTINE.—Spot, 43s. 6d. per cwt. CASTOR and COD unaltered.

South Wales By-Products

ALTHOUGH only a moderate business was done in South Wales by-products during the past week there was a greatly increased inquiry, and business is expected to show a substantial improvement within the next few weeks. Pitch, which is not too freely offered in view of a rumour that a Continental demand is likely to materialise shortly, is unchanged at about 85s. per ton, delivered. Solvent and heavy naphthas remain unchanged and have only a moderate demand. With local authorities committed to important new road undertakings it is anticipated that refined tars, already possessing a strong market, will strengthen with the forward march of the New Year. South Wales colliery undertakings, in any case, anticipate a stronger demand and some of them are contemplating developments in these branches of their by-product activities. Prices are unchanged, coke oven tar selling at 8½d. to 9d. per gallon and gasworks tar at 7d. to 7¾d. per gallon, f.o.r., maker's works, and from 10d. to 1s. per gallon delivered in barrels. Crude tar is unchanged at from 60s. to 65s. per ton, and has only a moderate demand. Patent fuel and coke exports have improved slightly, and oil imports have again advanced. Patent fuel exports during the past four weeks totalled 70,680 tons. The coke exports over the same period amounted to only 4,377 tons. Patent fuel export prices remain unchanged at from 22s. 6d. to 24s. per ton; coke (best foundry), 35s. to 37s. 6d. per ton, and other sorts from 27s. 6d. to 35s. per ton.

Nitrogen Products

Export.—The continental advices still report that the demand has not yet seriously commenced, although there is a little more inquiry. Some inquiry has also been received from the Far East. Prices are still rather nominal at about £9 12s. to £9 16s. per ton, f.o.b. U.K. port, in single bags.

Home.—A few more orders have been booked for delivery during the next few weeks, and merchants are evidently preparing for their spring trade.

Nitrate of Soda.—There is no change at present to report.

Salt Company Directors and I.C.I. Rumour

IN a circular issued to the shareholders on January 9 of the Cheshire United Salt Co., Ltd., the directors state: "Several shareholders have inquired what effect the rumoured absorption of the Salt Union, Ltd., and similar undertakings by the Imperial Chemical Industries, Ltd., would have on this company. These rumours have recently been publicly contradicted, but as salt or the brine from which it is extracted forms the basis of the heavy chemical trade, such rumours may be revived again and your directors wish to state that any such absorptions cannot, in their opinion, be adverse to your company, while they may easily prove highly beneficial. The company is entirely independent of the salt combine, and, having almost unlimited brine supplies, with a ready and profitable market for all salt produced, can continue to increase its works and production and remain independent."

Institute of Metals

IT is announced that during the past year the membership of the Institute of Metals increased from 1,801 to 1,903. It is anticipated by the Council that the present year—the twentieth of the Institute's existence—will witness the enrolment of the 2,000th member. An election of members is due to take place on Wednesday, January 18. Particulars of membership are contained in a booklet descriptive of the work of the Institute, which can be obtained from Mr. G. Shaw Scott, M.Sc., secretary, 36, Victoria Street, London, S.W.1. The annual general meeting of the Institute will be held in London on March 7-8, and the autumn meeting in Liverpool on September 4-7.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, January 11, 1928.

THE heavy chemical market continues active, inquiry, particularly for export, being larger than that received for some little time.

Prices both for home and continental products show little change except in the case of acetone, which has advanced £4 per ton.

Industrial Chemicals

ACETONE, B.G.S.—£63 to £66 per ton, ex store, according to quantity.

ACID ACETIC, 98/100%.—Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton; powdered, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted price unchanged at 7¼d. per lb., f.o.b. U.K. ports, but in very little demand.

ACID CITRIC, B.P. CRYSTALS.—On offer at 1s. 7d. per lb., less 5%, ex store, spot delivery.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality at 4s. 6d. per carboy. Dearsenicated quality 6s. per carboy, ex works, full wagon loads.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer from the Continent at 3¼d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality; £6 5s. per ton for 168° quality. Dearsenicated quality 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Still in little demand, but price unchanged at 1s. 2½d. per lb., less 5%, ex wharf.

ALUMINA, SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM.—Lump Potash quality quoted £8 5s. per ton, c.i.f. U.K. ports. Crystal meal 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA, CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2¼d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Unchanged at about £19 17s. 6d. per ton, ex wharf, prompt despatch from mines. Spot material on offer at £20 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—English material on offer at £7 5s. per ton, ex store. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—On offer at £6 10s. per ton, ex wharf, packed in casks.

BORAX.—English manufacturers' prices unchanged as follows: Granulated, £19 10s. per ton; crystals, £20 per ton; powdered, £21 per ton. Odd parcels of granulated on offer from America at about £16 per ton, ex wharf.

CALCIUM CHLORIDE.—Solid material in large drums on offer at £4 10s. per ton, ex store. Continental quoted at about £3 10s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40%.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material available at about £30 15s. per ton, ex store.

LEAD, WHITE.—Quoted £31 per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—4⅛d. per lb. delivered, minimum 4-ton lots. Under 4-ton lots, ⅛d. per lb. extra.

POTASSIUM CARBONATE, 96/98%.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100%.—Offered from the Continent at £25 15s. per ton, c.i.f. U.K. ports for powdered quality. Crystals 30s. per ton more.

POTASSIUM NITRATE.—Rather cheaper quotations from the Continent. Now on offer at £19 5s. per ton. c.i.f. U.K. ports, spot material quoted. £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6¼d. per lb., ex store, spot delivery. Offered from the continent at 6⅛d. per lb.

SODA CAUSTIC.—Powdered, 98/99, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, minimum 4-ton lots, carriage paid for contracts. Spot material 10s. per ton extra.

SODIUM ACETATE.—In good demand and in limited supply for prompt delivery. Imported material now quoted £19 15s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less. No change in price for this year.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' works, minimum 4-ton lots. Under four and over 2-ton lots 3⅛d. per lb.; under 2-ton lots, 3¼d. per lb.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 27s. 6d. per ton extra; alkali, 58%, £8 10s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4¼d. per lb., ex store. Offered for prompt shipment from the Continent at 4⅛d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices 50s. per ton, ex works, for unground quality, 52s. 6d. per ton delivered. Ground quality, 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices now as follows: Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £9 2s. 6d. per ton, delivered buyers' works on contract minimum, 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Prevention of Oil Pollution at Sea

THE Admiralty have taken another step to prevent oil pollution of navigable water, and a Fleet order issued on Friday, January 6, stated that it was necessary to take steps to prevent oily refuse being discharged into the sea within fifty miles of the coast. No oily refuse was to be handed over to sullage contractors, as their contracts did not cover the removal of refuse under such conditions. No oily refuse was to be placed in any dockyard lighter or craft unless arrangements were made for it to be disposed of on shore or discharged at sea fifty miles from any coast. Experiments were being carried out in connection with the treatment and disposal of oily refuse.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, January 12, 1928.

Although the movement of chemical products on this market during the past week has been more extensive than at last report, when things were still to some extent under holiday influences, the state of the demand for most lines can still at the best be described only as of a quietly steady character so far as the home trade is concerned, whilst export business is featureless. From the point of view of market values the price tendency of most lines is steady to firm.

Heavy Chemicals

There is not much stirring in the case of sulphide of sodium, current offers of which material are at £9 15s. to £10 per ton for the 60–65 per cent. solid quality and £8 5s. for the commercial. Bicarbonate of soda shows no change from the level of values lately ruling, and prices are steady at round £10 10s. per ton, with a moderate business being put through. A quietly steady trade is reported in the case of alkali, with makers' prices at £6 2s. 6d. per ton. A fair amount of attention is also being shown in caustic soda, which now ranges from £13 7s. 6d. to £15 7s. 6d. per ton, according to quality. Phosphate of soda continues to be quoted at up to £12 15s. per ton, but there is still only a moderate inquiry about for this material. Hyposulphite of soda is steady and in moderate demand at about £9 10s. per ton for the commercial material and £16 5s. for the photographic. A fair trade in bleaching powder is being done at the reduced rate to home users of £7 per ton. Slightly more interest is being shown in saltcake, offers of which by British makers are now at £2 12s. 6d. per ton. Chlorate of soda is firm and in moderate demand at up to 3d. per lb. There is a fair inquiry about for nitrite of soda, with values steady at from £19 to £19 5s. per ton. Current offers of bichromate of soda are attracting some attention at about 3⅛d. per lb. Prussiate of soda is steady and in quiet demand at 4¼d. to 4⅜d. per lb.

Caustic potash is dearer at about £33 per ton, and a moderate movement in this material is reported. Carbonate of potash, also, is attracting some attention at £26 per ton. Permanganate of potash, however, is in comparatively poor demand, and values are easy at about 5½d. per lb. for the B.P. quality and 4⅜d. per lb. for the commercial. Yellow prussiate of potash is fully maintained at 6½d. to 6¾d. per lb. and a fair business is being done. Firmness is still a marked feature of chlorate of potash, current values of this material being round 3d. per lb. A quiet trade is passing in the case of bichromate of potash and quotations are steady, about 4¼d. per lb. being asked here to-day.

There is no very pronounced buying movement just now in the case of arsenic, and, if anything, values are easier at £17 15s. to £18 per ton at the mines for white powdered, Cornish makes. Sulphate of copper continues very firm at from £24 15s. to £25 per ton, f.o.b., and a fair amount of inquiry for this material has been reported. Nitrate of lead is a shade more active than it has been of late at round £37 10s. per ton, but the acetates are in limited request with prices about unchanged on the week at £39 10s. per ton for brown and £41 to £42 for white. Acetate of lime continues firm at up to £16 10s. per ton for the grey material and about £10 10s. for the brown.

Acids and Tar Products

Oxalic acid has been in rather quiet demand, but prices are steady at from 3¼d. to 3½d. per lb. according to quantity. Tartaric acid is inactive, but prices are about unchanged at 1s. 2½d. to 1s. 2¾d. per lb. Citric acid is well held at 1s. 7d. per lb., though only a moderate business is being put through. Acetic acid is moving off fairly satisfactorily and quotations are steady at about £37 per ton for the 80 per cent. commercial quality and from £66 to £67 for the glacial.

Demand for pitch for shipment is still on rather quiet lines, and about £4 per ton, f.o.b., is being currently quoted. There is little stirring in solvent naphtha, offers of which are in the neighbourhood of 11d. per gallon. Crude carbolic acid is steady and in fair demand at 2s. 4d. per gallon, with crystals quiet at about 7¼d. per lb. Creosote oil continues to be the most active section, and prices are firm on a good inquiry for export at round 8d. per gallon.

S.C.I.: Manchester Section

Papers on Cellulose and Other Subjects

A meeting of the Manchester Section of the Society of Chemical Industry was held on Friday, January 6, Mr. L. G. Radcliffe presiding.

In a paper on "The Action of Caustic Soda on Partially Methylated Cellulose: the Heat of Reaction and Preferential Absorption," Mr. F. C. Wood and Miss A. C. Alexander stated that the most complete work on the mercerisation process from a textile-chemical point of view remained that of Coward and Spencer. The work now brought forward was based upon the idea that if caustic soda was attracted by hydroxyl groups in the cellulose molecule, then, by rendering them ineffective by substitution, this attraction should be decreased and show itself in a diminished preferential absorption of caustic soda. The only way to block up the hydroxyl groups in such a way as to render the product resistant to alkali was by means of an etherification process. The methylation was carried out in the cold and in the presence of ether in a shaking machine, so as to give as uniform a product as possible. Estimation of the methoxyl content gave values repeatedly between 12 and 14 per cent. of OMe.

Swelling with Water

Particulars as to swelling with water and the amount of hygroscopic water showed that the degree of swelling followed the methoxyl content. This swelling was shown to be reversible, unlike the swelling produced by caustic soda or sulphuric acid of certain concentrations. Partially methylated cellulose could be heated to 140° C. and on re-immersion in water still took up the same quantity of liquid water. The methylated cotton was dried at 105° C., and immersed in caustic soda solution. After standing overnight, or, in some cases, after two hours at 15° C., the solid phase was centrifuged and analysed together with the liquid phase exactly as described by Coward and Spencer. The change in weight concentration was also estimated, but this did not give such concordant values. Results had also been obtained indicating how considerably the preferential absorption was reduced merely by the partial methylation of the cellulose. The authors assumed this to be indirect evidence that the primary action in mercerisation was some form of so-called chemical union of the cellulose with the sodium hydroxide.

The conclusion was reached provisionally that while heat measurements of the action of caustic soda on partially methylated cellulose gave no clue as to the formation of chemical compounds, the very marked diminution in the preferential absorption seemed substantially to support such a view.

Oxidation of Fatty Acids by Moulds

Mr. T. K. Walker read a paper on "The Biological Oxidation of Fatty Acids." Most of the reactions which occurred in animal and plant tissues were, he said, due to the activity of enzymes; they therefore occurred under very much milder conditions than the average chemical reaction. A problem which had exercised the minds of medical men and bio-chemists for a long time was the change which fatty acids underwent in the digestive system. From some work which had been carried out at the Manchester College of Technology with common mould fungi it appeared possible that moulds might be used to replace hydrogen peroxide as oxidising reagents.

In the case of propionic acid, the mould was developed by making up a medium containing about 1 per cent. of the fatty acid in the form of a sodium or calcium salt, small traces of potassium and sodium nitrate being added for nutrient purposes. Lactic acid was first formed and three or four days afterwards pyruvic acid appeared. The pyruvic acid was converted into acetic acid and finally to carbon dioxide and water. Other experiments with regard to normal butyric acid and normal valeric acid were also described by the author of the paper.

Mander Brothers' Pension Scheme

Mander Brothers, paint and varnish manufacturers, Wolverhampton, have initiated a scheme commencing with the New Year, under which male employees will receive a pension of 35s. per week at the age of 65, in return for the payment of 1s. per week. There is no age limit of entry, the firm bearing the cost of starting the scheme on this basis.

Company News

BROKEN HILL SOUTH.—A dividend at the rate of 1s. is announced, payable February 24.

CHAMPION AND SLEE.—The net profits for the year ended September 30 were £11,544, and £2,881 was brought forward. A dividend of 10 per cent. is proposed, carrying forward £3,175.

NATIONAL FUEL OIL.—The accounts for the year ended October 31 show that the surplus of £3,326 brought forward was converted into an adverse balance of £6,709 after providing for debenture interest, etc.

ELECTROLYTIC ZINC OF AUSTRALASIA.—It is announced that a dividend at the rate of 12 per cent. per annum for the six months ended December 31 last has been declared on the whole of the issued shares in the company, due and payable at the registered office of the company on March 2.

PHŒNIX OIL AND TRANSPORT CO., LTD.—The directors have declared an interim dividend of 6d. per share on the fully-paid shares of £1 each and 3·465048d. per share on the fully-paid shares of 1s. each, less income tax, in respect of the financial year ended December 31, 1927, payable on January 31.

EASTWOODS, LTD.—An interim dividend is announced at the rate of 5 per cent., actual, less tax, and will be paid in respect of the ordinary shares to the holders registered in the books as at January 31, 1928, on which date dividend warrants will be posted, together with the interim report. (Last year the interim was 7½ per cent.)

CHESHIRE UNITED SALT CO.—The directors state that for the six months up to the end of August last the profit made was £2,682, subject to allowances for interest charges and London office expenses. For the three months up to the end of November last the profit was £1,595, and that for November, which was the first month to benefit from the increased capacity, the profit was £625, or at the rate of £7,500 per annum.

BRITISH CEMENT PRODUCTS AND FINANCE CO., LTD.—In accordance with the arrangements outlined at the recent annual general meeting, the capital has been increased to £500,000 by the creation of 285,000 new ordinary shares of £1 each and 300,000 deferred shares of 1s. each. The directors now offer to the ordinary shareholders 95,000 ordinary shares of £1 each at 10s. per share premium, in the proportion of one new ordinary share for every two ordinary shares now held. They also offer to the deferred shareholders 100,000 deferred shares of 1s. each at a premium of 9s. per share in the proportion of one new deferred share for every two deferred shares now held.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

OILS, PAINT PRODUCTS, ETC.—The Roumanian River Navigation Service are inviting tenders for the supply of the following various goods, the closing dates for the presentation of tenders being 10 a.m. on January 16, 1928: 9,000 kg. zinc white in powder; 15,000 kg. "iron tar" (goudron de fer); 6,000 kg. lead minium; 10,000 kg. linseed oil, double-boiled; 1,000 kg. red paint prepared with English red and double-boiled linseed oil; 1,500 kg. black paint made with double-boiled linseed oil; 300 kg. turpentine; 200 kg. drying oil. A copy of the conditions which governed a similar call for tenders in March last can be obtained by United Kingdom firms interested on application to the Overseas Trade Department. (Reference C.X. 2595.)

VARIOUS GOODS.—The Director-General, India Store Department, Branch No. 10, Belvedere Road, Lambeth, S.E.1, invites tenders for (1) 40,800 gallons cresol, saponified (a sample will be required); (2) menthol and various essential oils; (3) 11,820 lbs. chloroformum, B.P.; (4) 100 lbs. acidum salicylicum, B.P., and 8,450 lbs. sodü salicylas, B.P.; (5) 4,000 lbs. ergota, B.P.; (6) 31,500 lbs. acidum boricum, B.P.; (7) pottassi bromidum, B.P., sodü bromidum, B.P., etc.; (8) 57,750 lbs. bleaching powder (stabilised); (9) aconite radix, B.P., and various other drugs. Tenders due January 27 for No. 1 and January 31 for the rest. Forms of tender obtainable from the above for a fee of 5s. per set, which will not be returned.

VARIOUS GOODS.—The Roumanian Railway Administration invites tenders for the supply of 70,000 kg. iron minium, 40,000 kg. lead minium, and 33,000 kg. lamp black (Chinoros) (closing date January 18, 10 a.m.); 6,500 kg. white lead, 72,000 kg. zinc white, 60,000 kg. powdered chalk (Bergkreide), and 5,000 kg. chalk for cement (Schlemmkreide) (closing date January 21, 10 a.m.); 300,000 kg. carburate of calcium (carbide) (closing date January 14, 10 a.m.); 32,000 kg. rectified turpentine (closing date January 27, 10 a.m.); 44,000 kg. yellow ochre, 3,000 kg. ochre "Satinober," 70,000 kg. English red, and 1,800 kg. vermilion, etc. (closing date January 31, 10 a.m.). Full particulars regarding all these tenders may be had from the Directia Generala a Cal.or Ferate Române, Directia P. Calea Victoriei, 118, Bucharest. A translation of the general conditions governing these tenders is available for inspection at the Department of Overseas Trade. (Reference C. 2581.)

TAR OR TAR SUBSTITUTE.—The Town Council of Johannesburg are calling for tenders to be presented by February 9, 1928, for the supply of 2,600 tons of tar or tar substitute (Reference B.X. 4121.)

OILS AND FATS (FOR SOAP MAKING) ETC.—A commission agent in Cologne desires to represent a British firm in the Rhineland. (Reference No. 37.)

OIL FILTER.—Tenders are invited by the Town Council of Johannesburg, Stores Department, for the supply and delivery of one centrifugal oil filter capable of filtering and dehydrating not less than 30 gallons of turbine oil per hour; to be driven by a three-phase 500-volt motor. Tenders will be received up to noon on February 9, 1928. (Reference A.X. 5749.)

Petrol in the Thames: An Experiment

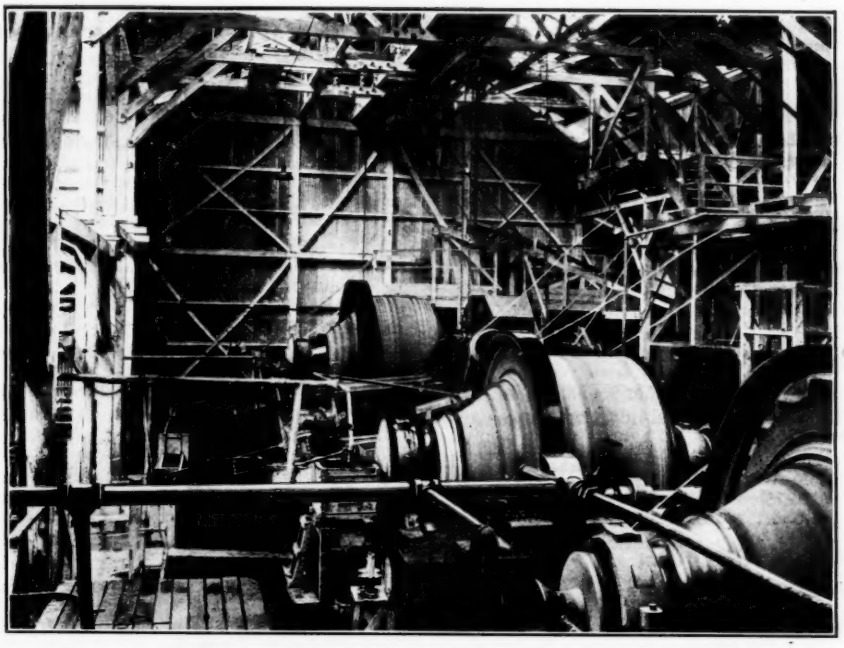
IN view of the proposal of the Port of London Authority to allow petrol to go further up the Thames to Purfleet than Thameshaven, an interesting experiment was made on Monday with the object of finding out the area covered by petrol which had been poured on the water and to see whether it "flashed" at a long distance. The trial, which was the first of the kind, took place on the Isle of Grain in an inlet of the Medway running through land occupied by the Medway Oil and Storage Co. and the Petrol Car Co. The experiment was conducted by Mr. Harold Moore, chief consulting chemist to the Port of London Authority. Two thousand nine hundred gallons of petrol were pumped into the water, and for three hours samples of the water were taken.

At the continuation of the Ministry of Transport inquiry, on Wednesday, Mr. Moore described his experiment. Most of the oil collected in two pockets, where it was roughly an inch thick. He decided to keep the oil in one "pocket" for further observation, and set fire to the other about three and a half hours after it was pumped on to the water. He lit a match and threw it in while the end was spluttering. The match went out. Seven matches in all went out. The eighth he held close to the oil. There was a small flash, which went out, and then the oil fired again. There was a spot of flame which took one or two seconds to get to the size of a postage stamp, and he could have blown it out quite easily. It was five or six seconds before it was a foot square. It then accelerated, and took about a minute to travel about 40 yards. There was no tendency for the flame to flash over the water. The inquiry was again adjourned.

Chemical Trade Returns for December

THE Board of Trade Returns for December appear as THE CHEMICAL AGE goes to press. Imports of chemicals, drugs, dyes and colours for the month ended December 31, 1927, amounted to £1,478,631, an increase of £95,579 on 1926, and of £164,579 on 1925; exports amounted to £2,032,660, an increase of £591,659 on 1926, and of £267,826 on 1925; while re-exports of imported merchandise amounted to £74,417, an increase of £5,133 on 1926, and a decrease of £27,043 on 1925. For the year ended December 31, 1927, imports amounted to £15,469,485, an increase of £20,787 on 1926 and of £1,082,992 on 1925; exports amounted to £23,438,235, an increase of £1,778,519 on 1926, and a decrease of £186,967 on 1925; while re-exports amounted to £1,012,214 an increase of £28,080 on 1926, and a decrease of £198,758 on 1925. Detailed figures will appear in our next issue.

Hardinge Mills—Preferred.



"1927." Has proved a record year for Hardinge Mill Sales. Among the orders received is one for 5—10′ dia. Hardinge Mills for Chemical Plant in North of England.

Hardinge Mills operate continuously with a minimum of mechanical attention, at very low cost per ton.

These being prime factors in the repeated preference for Hardinge Mills.

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CONICAL MILLS

BRITISH BUILT THROUGHOUT

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Deed of Arrangement

HAIGH, Joe, trading at Spen Valley Colour Works, Union Road, Liversedge, also trading as SCARBOROUGH DRIPPING CO. at Hope Street, Scarborough, and residing at The Grove, Birstall, colour and chemical manufacturer. (D.A., 14/1/28.) Dated January 3, filed January 9. Trustee, E. D. Taylor, 7, Bond Place, Leeds, C.A. Secured creditors, £876; liabilities unsecured, £6,197; assets, less secured claims, £904.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

ACME CHEMICAL CO., LTD., Tonbridge. (M., 14/1/28.) Registered January 2, transfer of mortgage and further charge securing £3,200 inclusive of £3,000 transferred, to A. H. Bailey, Tonbridge, solicitor and another; charged on lands and buildings in Vale Road East, Tonbridge, with machinery, etc. *£3,000. June 6, 1927.

COWBURN (W. H.) AND COWPAR, LTD. (late W. H. COWBURN, LTD.), Manchester, chemical merchants. (M., 14/1/28.) Registered December 22, £15,000 debentures; general charge. *£30,000. March 14, 1927.

London Gazette, &c.

Winding Up Petitions

MERCER WARD, LTD. (W.U.P., 14/1/28.) A creditor's petition for winding-up has been presented and is to be heard at the High Court of Justice, Strand, on Monday, January 16.

SUTER CAMPBELL OILS, LTD. (W.U.P., 14/1/28.) A creditor's petition for winding-up has been presented by Anglo-American Oil Co., Ltd., 36, Queen Anne's Gate, Westminster, oil merchants, and is to be heard at the Royal Courts of Justice, Strand, London, on January 16.

Company Winding Up Voluntarily

HAMPSHIRE (F. W.) AND CO., LTD. (C.W.U.V., 14/1/28.) By Special Resolution, December 16, confirmed December 31. P. Doughty, 24, The Strand, Derby, Chartered Accountant, is appointed liquidator. Meeting of creditors at the offices of Wilshire, Hall and Co., 24, The Strand, Derby, on Thursday, January 19, at 3 p.m. All creditors will be paid in full.

New Companies Registered

A. H. BAULU, LTD., 16, Mark Lane, London, E.C.3. Registered January 4. Nom. capital £5,000 in £1 shares. To acquire the business of A. H. Baulu carried on at 16, Mark Lane, London, E.C., and to carry on the business of general storekeepers, manufacturers of and dealers in crystallised glacé or drained fruits, Angelica, fruit pulp, nuts, silver cachous, and all essential oils and raw materials for perfumes, soapmakers and druggists, manufacturers of and dealers in ochres and minerals, etc. Directors: A. H. A. Baulu, Edith Baulu, and H. A. Baulu.

BRITISH ARTIFICIAL SILK MACHINES, LTD., 83, Pall Mall, London, S.W.1. Registered as a private company on January 5. Nom. capital £5,000 in 4,000 ordinary shares of £1 each and 20,000 deferred shares of 1s. each. Manufacturers of and dealers in machinery and implements for the manufacture of silk, artificial silk, wool, cotton, flax, hemp, jute, wood and staple fibre and other fibrous yarns, etc.

BRITISH PAINT AND LACQUER CO., LTD. Registered January 9. Nom. capital, £20,000 in £1 shares. Manufacturers, producers, importers and exporters of and dealers in lacquers, varnishes, enamels, paints and brushes of all kinds, etc. Subscribers: A. Walsh, "Hothfield," Boars Hill, Berks, and A. Mueller.

LEYLAND AND CO., LTD.—Registered January 9. Nom. capital, £500 in £1 shares. Manufacturers of soap, starch, glycerine and other articles of domestic use, inks, stains and dressings, polishes, oil, paint and chemical manufactures, merchants, etc. Directors: H. A. Oldershaw, 6, Upper Hastings Street, Leicester, and Miss H. R. Oldershaw,

Chemical Lorry Accident: Driver Killed

Inquest Opened and Adjourned

GEORGE RIVETT, aged 22, a motor driver, was burned to death and four others who courageously tried to save his life were injured when a lorry conveying a load of chemicals overturned near Hockliffe, Bedfordshire, about midnight on Wednesday, January 4. Skidding on frozen snow on Watling Street, the lorry crashed over a steep embankment into a garden. Almost immediately the vehicle became a blazing mass, and the containers on it began to explode. The driver, George Rivett, of Walthamstow, was pinned amidst the flames. Gallant but unavailing efforts to extricate him were made by other lorry drivers, and four of them had to be taken to hospital for treatment.

The lorry had been loaded at the Oldbury Chemical Works, in North Worcestershire, belonging to Albright and Wilson. On it were packed some 300 shells or containers. These were in no way similar to shells for gunfire, and were not for explosive use. They weighed about 40 lb. each. A representative of the firm stated in an interview that the shells were 8 in. or 9 in. long and were made of steel. With the chemical contents of the shells there was a very small proportion of phosphorus. It was a War Office order, but the exact purpose for which the material was required was not known to the firm, though possibly it was to be used for experimental work. Asked if the material were of an explosive nature, the firm's representative replied that it was not. It contained no explosive mixture whatever. Ordinarily the chemical would simply smoke. It was harmless enough to be left lying loose in the works. He did not think that heat from the burning petrol would cause the shell containers or the chemical to burst or explode. Their representative had gone down to investigate, and so far as the firm could judge without his report it was the petrol, not the shells, which was the cause of the explosions. He added that hundreds of tons of this and similar materials had been transported to London before without an accident.

The inquest on the driver was opened on Friday, January 6. Major J. C. G. Hunter, of Woolwich Arsenal, Inspector of Explosives, stated, in regard to the reports that the shells exploded, that there was no explosive, as such, contained in them. The proceedings were adjourned for a fortnight.

Benn Brothers' Other Journals

THE CABINET MAKER.—Furniture Shipments in December; Textiles in Furnishing: the Artificial Silks; The Dictionary of English Furniture: Third Census of Production.

DISCOVERY.—"The Glozel Discoveries," by Salomon Reinach; "Oceanic Migrations," by James Hornell, F.L.S., F.R.A.I.; "The Cuna Indians of Panama," by Erland Nordenskiold; "Researches on the Economic Factor in Birds," by C. J. Patten, M.A., M.D., Sc.D.; "A Defence of Stefansson's Discoveries," by George H. Wilkins.

THE ELECTRICIAN.—"Pictures by Wireless," by A. J. Smith; "Storage Batteries," by E. C. McKinnon; The Physical and Optical Societies' Exhibition; "Insulation of High Tension Lines Near the Sea," by Major T. Rich.

THE FRUIT GROWER.—"Eelworm attacks on Potatoes," by A. Roebuck, F.E.S.; "Fruit Transport and Storage," by "Expert"; Fruit Auctioneering in Bremen.

GARDENING ILLUSTRATED.—Early Daffodils and Narcissi; Pansies in Spring and Autumn; Arrangement in Window Gardening; Lavender: Its Cultivation for Marketing and Distilling; Planting Round the House; Tiny Rock Gardens.

THE GAS WORLD.—"Central Heating by Gas," by M. C. Prud'hon; "Evaporation and Condensation," by J. G. Clark; Census of Production: Chemical Trade.

THE HARDWARE TRADE JOURNAL.—Fewer Hardware Bankruptcies: The Latest Returns Analysed; Ironmongers' Business Letters; Partnership Accounts; The Making of Aluminium Hollow-ware.

THE TIMBER TRADES JOURNAL.—Defects in Timber; New Tallies and Why; Boxmakers at Dinner; Economics in Machinery Making.